DOCUMENT RESUME

ED 265 387 CE 043 394

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TITLE Formative Evaluation of the Computer-Assisted Learning Pilot Project in Canadian Federal Penitentiary Schools. August 1983-March 1984.
INSTITUTION Correctional Service of Canada, Ottawa (Ontario).
PUB DATE 6 Jun 84
CONTRACT 1983/84-HQ-188
NOTE 88p.; Portions of appendices will not reproduce clearly.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Adult Education; *Computer Assisted Instruction; *Correctional Education; Cost Effectiveness; English; Foreign Countries; *Formative Evaluation; Language Arts; Mathematics; *Microcomputers; *Online Systems; *Program Effectiveness; Program Evaluation; Programing Languages; Student Attitudes; Teacher Attitudes
IDENTIFIERS *Canada

ABSTRACT

The computer-assisted learning (CAL) pilot project in Canadian penitentiary schools involved the use of computer courseware supplied from a central computer via telephone lines to terminals in the schools. Courseware was in three curricular areas: mathematics, English language arts, and the BASIC programming language. The evaluation was conducted by visiting microcomputer and online sites, where teachers and inmate-students were interviewed and observed. Interview schedules, questionnaires, and opinionaires were developed for use by the evaluation team. An assessment of the extent to which Stony Mountain, Warkworth, Leclerc, and Springhill have been successful in implementing online CAL in the classrooms of their schools was examined. Factors that aided and impeded the implementation, staff and student attitudes, cost calculations, and comparisons with microcomputer delivery systems were recorded. Findings were that (1) staff and student attitudes are positive, (2) expenditures for the computer delivery mode are less than would have been required to have a teacher deliver the same number of hours of instruction, and (3) a justifiable need exists for additional equipment, courseware, and training. Recommendations are presented regarding teacher training and supervision, acquisition of additional hardware, improvements to software, and credits for courses. (Appendixes, amounting to approximately one-half of the report, contain descriptions of implementation sites, including student altitude survey results and summaries of staff attitudes and administrative concerns; information from other sites, including staff questionnaires; a list of suppliers; and a schedule of site visits for the project. (YLB)

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ED265387

Computer-Assisted Learning Evaluation

Carlson/Dostaler

June 1984

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FORMATIVE EVALUATION OF THE COMPUTER-ASSISTED LEARNING PILOT PROJECT IN CANADIAN FEDERAL PENITENTIARY SCHOOLS

AUGUST 1983 - MARCH 1984

MARTHENA CARLSON

ANN DOSTALER

JUNE 6, 1984

CONTRACT NO. 1983/84 HQ-188, CORRECTIONAL SERVICES CANADA

EDUCATION AND TRAINING DIVISION

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ABSTRACT

The results of a formative evaluation of the on-line computer-assisted learning (CAL) project in Canadian federal penitientiary schools from August, 1983 to March, 1984 are presented in this report. The CAL pilot project involved the use of computer courseware supplied from a central computer via telephone lines to terminals in the schools. The courseware was in three curricular areas: mathematics, English language arts, and the BASIC programming language.

The mathematics courseware that was used in this pilot project was developed by the Ontario Institute for Studies in Education (OISE). The English language arts courseware was developed by Compris Incorporated of Ottawa. The BASIC courseware was developed by Homecom of Toronto. All courseware was delivered by Cybershare Ltd. of Winnipeg via a mini computer.

The evaluation was conducted by visiting both microcomputer and online sites, where teachers and inmate-students were interviewed and observed. Interview schedules, questionnaires and opinionaires were developed for use by the evaluation team. Telephone interviews were also conducted with staff of the appropriate provincial ministries of education. Although microcomputer useage was not to be evaluated, sites using this type of delivery system were visited in order that some comparisons could be made.

An assessment of the extent to which Stony Mountain, Warkworth, Leclerc and Springhill have been successful in implementing on-line CAL in the classrooms of their schools was examined. Factors that aided and impeded the implementation, attitudes of staff and students, cost calculations, and comparisons with microcomputer delivery systems were recorded and are discussed in this report.

The findings were: 1) that staff and student attitudes are positive, 2) expenditures for the computer delivery mode are less than would have been required to have a teacher deliver the same number of hours of instruction and 3) that there is a justifiable need for additional equipment, courseware and training.

Recommendations are presented with respect to: teacher training and supervision, acquisition of additional hardware, improvements to software, and credit for courses completed by students. The rationale that supports the recommendations is perhaps best stated by Bell (1983, p. 141).

> You can't just drop computers into schools-any school. You have to have someone ... who can see what's needed, set up the hardware, train the teachers and tutors to run the computers, and help the students and change the programs as needed (Bell, 1983).

INTRODUCTION

The contract was to evaluate computer-assisted-learning (CAL) in five penitentiary schools by means of visits, observations and interviews. The Education and Training staff of Correctional Services Canada (CSC) originally requested a comparison of microcomputer (stand-alone) sites and on-line (minicomputer) sites in the teaching of English language and mathematics. The dependent variables to be reported were teacher attitude, student attitude, teacher role, student achievement, number of students served, time spent (hours of utilization), cost effectiveness, student record keeping and the suitability of the systems for the existing programs.

In the September-December, 1983 site visits, three things became apparent that necessitated a change in the contract. These were: microcomputers were being used to teach computer literacy and computer programming languages, not English language and math courses; the installation of the on-line CAL equipment took much longer than anticipated which meant the sites were in a early stage of implementation that precluded the planned evaluation; and the decentralization of the on-line computer-assisted learning (CAL) project to the regional level resulted by default with each institution having to deal with major changes and intrusions with no additional personnel, time, or follow-up training. The decentralization further meant that rather than one unified program utilizing the capabilities on an on-line system there were four separate programs. The interim report submitted in December 1983 describes the findings in more detail.

Because a comparison between types of hardware or delivery systems would not be possible, a change was requested in our contract. At a meeting in January 1984 attended by policy and planning, education and training for CSC and our staff, new terms were reached. The terms were for the provision of technical assistance and advice, and a refocus of evaluation efforts to provide a formative evaluation of the on-line CAL system.

The purpose of the investigation was to describe the factors that aided or impeded the implementation of CAL during the pilot period. The factors that affected the implementation in all sites were staff training, site of institution training, location of terminals within the school, and the suitability of the on-line system to the school program. Additionally the teacher attitudes, student attitudes, number of students served, hours of utilization and the cost of providing the on-line service were to be reported.

THE COMPONENTS OF ON-LINE CAL

The on-line services were provided under contract by Cybershare Ltd. of Winnipeg, using a Honeywell Level 6 minicomputer. Within each of the four institutions there are three Cybernex XL 84 terminals with standard typewriter keyboards. The terminals in each site are connected to a cable via a Memotec multiplexor. This enables data to be sent to and from the institutions and Cybershare. The institutions involved in the pilot are Stony Mountain, Warkworth, Springhill and Leclerc. The pilot period was August 1983 to March 1984.

The mathematics courseware available during the pilot was developed by the Ontario Institute for Studies in Education (OISE) and is intended for grades 7, 8 or 9. The mathematics courses are titled arithmetic, integers and rationals, algebra, probability, measurement, statistics, coordinates and transformations and may be thought of as the chapters in a mathematics textbook. These courses are available in English and French with the French courses titled Mathpro.

The English language arts courseware was developed by Compris Inc. of Ottawa using the CAN-8 authoring language. The philosophy used in developing the teaching sequences was to have students acquire the ability to communicate effectively. The Compris courses are titled Reading with Understanding and Discrimination I and II, Critical Thinking I and II, Punctuation, Grammar, Spelling, Report Writing I and II and Literary Experience I and II.

PROCEDURES

The procedures used in conducting the evaluation were those of standard survey research methodology. An interview schedule was developed, tried out with teachers and staff in the first three institutions we visited. This schedule was revised and used to train the interviewers. The questionnaire and student and teacher opinionaires underwent similar development and revision. A copy of the instruments and the schedule of our visits and activities are included in the appendix of the report.

Our primary information gathering activities consisted of: visiting eight penitentiary schools, interviewing all teachers in attendance on the days of the visits, interviewing all inmate students who had used CAL and were willing to be interviewed and in attendance on the days of our visits, administering an opinion instrument to all students involved with CAL who were willing and able to complete the instrument and leaving a questionnaire that was to be filled out and returned by the CAL teachers. The four on-line CAL sites were each visited twice. Telephone interviews were conducted with the staff of the various provincial ministries of education to determine if there was guidelines that applied to this manner of teaching.

BRIEF HISTORICAL REVIEW OF CAL

There are three anotated bibliographies in the ERIC database that cover much of the in-print historical background of computer-assisted instruction (CAL) prior to 1980. The references are given to call attention to the size of the literature which is implied by the number of pages in an annotated bibliography. The annotated bibliographies are:

The best of ERIC: Recent trends in computer-assisted instruction (ED 076 025) by Richard Clark (1973, 15 pp);

Computer-assisted instruction: the best of ERIC 1973 - May 1976. (ED 125 608) by Marian Beard (1976, 42 pp);

Computer-based Education: The best of ERIC June 1976 - Aug 1980. (ED 195 288) by Keith Hall (1980, 96 pp).

There continues to be a great amount of literature on CAL and each publishing company and computer vendor has its own publication to provide an outlet for the exchange of information in support of its user community. For example, "IDEAS" by Digital Equipment Corporation, Swifts' "Directory of Educational Software for the IBM PC", Queue's "Microcomputers in Education Journal" and "Catalog of Educational Software". The National Institute of Education (NIE) and individual states and provinces continue to let major contracts for development and dissemination as have various consortiums of states and provinces, so there will most likely continue to be much information on CAL.

On the hardware and systems side of the literature, the Institute of Electrical and Electronics Engineers (IEEE), the Association for Computing Machinery (ACM), The American Federation of Information Processing Societies (AFIPS), Association for Educational Data Systems (AEDS), and The International Federation of Information Processing (IFIP) have many publications and special interest groups which address the use of computers and systems in instruction.

Given the amount of literature and the demand for some way of synthesizing the findings in a quantifiable way, many recent literature summaries have adopted a technique called meta-analysis. The rationale for meta-analysis is to apply the same objective or experimental design methods that are used in analyzing results from one study to a collection of studies on a particular topic. Design features of the topic become the independent variables for the statistical analysis stage and the outcomes of the studies are the dependent variables. Needless to say there are critics and proponents of this technique as well as critics and proponents of the version of the test statistic used in statistical assessment of "treatment" effects.

To provide a guide for those who have not been following the topic of instructional technology from the meta-analysis approach to the literature, an illustrative listing is as follows:

Kulick, Kulick and Cohen. Research on audio-tutorial instruction: A meta-analysis of comparative studies. Research in Higher Education, 1979, 11, 321-340.

Kulick, Kulick and Cohen. Effectiveness of computer-based college teaching: A meta-analysis of findings. Review of Educational Research, 1980, 50, 525-544.

Kulick, Cohen and Ebeling. Effectiveness of programmed instruction in higher education. A meta-analysis of findings. Educational Evaluation and Policy Analysis, 1981.

Kulick and Bangert-Drowns. Effectiveness of technology in precollege mathematics and science teaching. Journal of Educational Technology Systems, 1983, 12, 137-158.

Kulick, James. A systhesis of computer based instruction. Educational Leadership, 1983, 41(1), 19-21.

The two meta analyses that are most applicable to the CSC pilot CAL are the ones that include the secondary and post-secondary age groups. For example, the literature search for the college group covered eight data bases and located more than 500 relevant articles. The original pool of articles was narrowed to 59 studies that met the criteria of taking place in actual classrooms; using quantitatively measured outcomes in CAN and control classrooms; and using sound research methodology. As stated earlier the studies are then classified on these design features, statistical analyses are conducted and the results summarized.

Kulick, Kulick and Cohen (1980) are summarized as computer-based instruction made small but significant contributions to the course

> achievements of college students and also produced positive, but again, small, effects on the attitudes of students toward instruction and toward the subject matter they were studying (abstract, p. 525)

A summary of Kulick's 1983 meta-analysis of computer-based instruction in secondary education is given by Molnar and Deringer (1984, p. 118)

> Computer-based teaching has raised student scores on the final examinations from the fiftieth to the sixty-third percentile. Students have developed more positive attitudes toward the computer and course taking. Computer-based groups reduce substantially the amount of time needed for learning by approximately one-third.

On-line systems currently in use in CAL include the following:

PLATO - The Programmed Logic for Automatic Teaching Operation project was housed at the University of Illinois and delivered a college course in 1965. At the elementary school level, computer-assisted instruction in arithmetic, initially drill and practice using teletypes and dial-up to Stanford University's main-frame, was reported by Suppes and Morningstar (1969). PLATO is still commercially available for mainframe and microcomputers from Control Data Corporation.

TICCIT - The Time-Shared Interactive Computer Controlled Television project was originally a venture of the University of Texas, Brigham Young University and the Mitre Corporation of McLean, Virginia. the TICCIT project used a minicomputer, a television screen as a monitor and offered courseware at the community college level (Bunderson, 1972). TICCIT is still available from the Hazeltine Corporation.

OISE - In Ontario, the Individualization Project of the Ontario Institute for Studies in Education has been involved in CAL since 1970. Courseware was initially developed to meet the needs of the adult learner returning for training. The courses were the equivalent of semester-length courses for first year college students registering in the Colleges of Applied Arts and Technology. The courseware used in CSC CAL was developed as part of the test validation of the Ontario Assessment Instrument Pool (OAIP) and covers 30% of the ministry

guidelines for mathematics content of grades 7 to 10 (Gershman & Sakamoto, 1981). In a conversation with an official of the Eastern Region of the Ontario Ministry of Education in Ottawa, it was said that the Ministry is putting all the OAIP science items on diskettes for the Apple II microcomputer. This may or may not apply to all the other items and subjects included in the OAIP test item pool. The reason given for the use of micro computers is that the schools have the necessary hardware.

MECC - In Minnesota, the Minnesota Educational Computing Corporation began offering timeshared computer services from a central purpose computer in 1974. There were approximately 2500 terminals and 1100 microcomputers capable of connecting to the Minnesota Time Share System in 1981, serving 90% of all school districts in Minnesota (MECC, 1983). The majority of the user schools discontinued using this service because of a state-level policy decision that stopped funds for communication charges, and the switch to microcomputers. On-line instruction is available for any school that is willing to pay the communications charges.

The National Science Foundation funded a five-year comparison of PLATO IV and TICCIT. PLATO IV was used in five community colleges in Illinois and TICCIT in two community colleges in Arizona and Virginia. Both of these studies were included in the 1980 meta-analysis of computer-based college instruction, but are included here because of their importance. The summary of the evaluation reports was:

> The teachers and students had very positive attitudes towards PLATO, that there was no effect on completion rates and that there was no significant difference in performance between PLATO classes and students in conventional classes. (Murphy and Appel, 1977). The TICCIT program evaluation reported that there was a significant performance advantage in favour of TICCIT students, but there was lower completion rate (higher drop-out rate) and the teachers and student attitudes were not as favourable. ...The dramatic decrease in course completion may be inherent in self paced instruction because students who have trouble managing their own instruction are risks (Alderman, 1978).

In commenting on the result of the evaluation of TICCIT, Bunderson (who has been associated with the learning principles used in developing the courseware) says "The TICCIT courseware has to be evaluated publicly before it had been subjected to internal formative evaluation and revision (Bunderson, 1981 p. 111)". Later in suggesting reasons for the high dropout rate he says "However, the teacher resistance, coupled with the students' lack of habits and traditions for learning in this kind of environment may lead to worse attitudes and lower completion rates" (p. 115).

There are studies currently in progress of computer-assisted learning using other programming/authoring languages. See for example: Crawford and Crawford (1983), Anderson (1984) and pages 161-300 of the June 1984 issue of Byte magazine on Education. The general impression from these sources is that teachers have favourable attitudes when they are either involved in developing the courseware or familiar with it because of university courses or when they have sufficient training in system use and assistance with integrating it into their workload.

At the pre-school and elementary school level a report of an eleven year longitudinal study of eight high risk, low SES children concludes that all students who had experienced the intervention from age 3-6 are all achieving at grade level in reading comprehension and at or above grade level in reading skill. (Steg, Vaidya, Hamdam 1982-83).

In another small sample size study using students with learning disabilities, the students using CAL made much greater gains in math achievement and in math skills than the students in the resource instruction group (Trifilette, Frith and Armstrong, 1984).

COMPUTERS IN THE PRISON SETTING

Computer technology has been used in several provincial, state, federal and county correctional facilities. The curriculum offerings include the same courseware that are offered in the non-prison setting, and include school subjects,

occupational skills and guidance offerings. PLATO courseware has been the system most widely used, and reported. The papers report that the technology itself is a great motivator, that achievement gains are associated with the amount of student instructional time, the attitudes, activities and training needs of other institutional employees and pitfalls to avoid in start-up CAL operations. The available literature for on-line or satellite CAL are reported for Texas, Illinois, California, New York, Pennsylvania and Minnesota and span the 1972-1981 time period. See for example Bell, 1983; Diem and Knoll, 1981; Gilpin, 1982; Heller, Wheeler and Gross, 1979; Siegel, 1978; Rizza and Hunter 1979.

Three of the forty-three U.S. Federal prisons are currently (1984) involved in a computer-assisted instruction pilot program using minicomputers to provide a variety of courseware. (Sylvia G. McCollum, personal communication, March 12, 1984). The courseware is supplied under contract from Computer Curriculum Corporation and National Education Corporation and includes career development, computer literacy, English as a second language, electronic and digital technicians training. The individuals in charge of the courseware components are Dr. Ron Fortune for Computer Curriculum Corporation of Pala Alto, CA and Ms. Cynthia Nelson for National Education Corporation of Westport, CT. The results from the pilot were encouraging and the service will be expanded to five other sites. Each of the minicomputers is capable of support 96 terminals; the terminals and courseware have audio support for the English as a second language, light pens and touch sensitive screens. Local schools in the area of the institutions have the authority to access of the courseware. The software (courseware) was selected because the instructors felt that it was the best available to meet the inmate student needs. The three sites involved in the initial pilot were Morgantown, West Virginia, Denver, Colorado, and Petersburg, Virginia. All U.S. federal prisons also have microcomputers with printers and record keeping capabilities.

BACKGROUND TO CAL IN CORRECTIONAL SERVICES CANADA

There are approximately 23 Federal penitentiaries in Canada with academic and vocational programs. The academic programs are offered only in medium and

maximum security institutions, where an inmates sentence is greater than 2 years. In 1982 approximately 2000 inmates took advantage of the educational programs offered in the institution schools.

The academic programs are offered under contract with the provinces and credits earned are therefore provincial credits. Because the provincial standards vary from province to province and proper placement within an educational program is beneficial to both inmate and teaching personnel, all institutions use the Cooperative School College and Ability Tests to assist them in placing students. These tests are available in both French and English language editions.

Prior to 1983, there were a variety of microcomputers with assorted instructional packages in 18 institutions. Institution teachers and inmate students felt that some of the instructional packages or diskettes provided practice in some skills but did not really teach subject matter content. The Education and Training staff felt that it should be possible to obtain good quality Canadian educational courseware delivered from a central facility. By using a central facility, the courseware could be delivered to any institutions willing to participate. The courseware in this arrangement would be the "teacher" of routine academic skills and the human teachers the resource to consult when learning difficulties are encountered. The Prairie Regional Headquarters had previously contracted to deliver Plato Computer Based Learning on a pilot basis from September 1, 1983 to March 31, 1984 with the Instructional Systems Group of the University of Alberta as the supplier. One feature of the Edmonton pilot was the provision for inmates to continue the educational programs started in Edmonton upon transfer to Drumheller. Two other features of the Alberta pilot were the provision for on-line and stand alone Plato courseware and the installation of an on-line terminal in a living unit. The evaluation of the CSC Alberta pilot including cost is described and documented by Szabo (1983).

The institutions participating in the Can-8 on-line CAL were Stony Mountain, LeClerc, Springhill and Warkworth. The Regional Manager of the Pacific Region refused to participate in on-line CAL. The courseware selected for the pilot was to meet the academic math (in either language) and the English language skill

needs of students beyond the elementary level. A listing of the various courses is presented earlier in the report or can be obtained from the Measurement, Evaluation and Computer Applications staff of OISE for math and Compris Inc. Ottawa for English language arts.

FACTORS RELATING TO THE OPERATION OF THE CAL PILOT

Staff Training

Each of the four institutions was asked to send two individuals to NHQ for CAL training in June 1983. Springhill sent one contract teacher and one CSC teacher. Warkworth sent one CSC teacher and the librarian, also a CSC employee. Leclerc sent one contract teacher and the AWET. Stony Mountain requested that the training take place within the institution so all teachers could have some training.

The three day training at NHQ was inadequate. NHQ was not a good site as the rooms were not suited to the training. Dial-up facilities to a host other than the one awarded the contract had to be used. This meant that the instructions given differed from those actually used within the institutions. It also seemed that several of those attending were not interested in CAL, but fortunately three teachers (one from each site) were interested.

A training session was planned for Stony Mountain in July, but one of the training staff, Mary Pal Carroll of OISE, was not admitted to the institution because of the tense conditions due to prison overcrowding and heat during summer, 1983. She did however spend the day explaining the OISE math curriculum and its use to the math teacher, Winston Alexander, Dr. Carroll returned to give a one day session for the staff on September 1, but reported spending several hours of her time resolving system problems. Later in September, a systems analyst from Cybershare also visited the institution to provide additional training in system use and showing the math staff how to register math students.

Even though three different training times were provided for Stony Mt. staff, the training did not reach the entire intended audience in that none of the Compris

courses were used. Some of the reasons given were that the terminals were "math" terminals, the handouts shown one teacher were not part of the Manitoba guidelines for the English course he was hired to teach and feeling by some staff that they would rather have microcomputers.

One can speculate about the reason for the systems or communications problems that have occurred during the pilot stage of this project. One possible explanation may be that no-one with time to devote to the implementation was in charge of the project at NHQ. Other possible explanations may be that contract teachers do not have staff or line authority in institutions, the usual channel of communicating reaches the actual teacher too slowly, if at all, and because the staff at NHQ did not realize the extent of on-site follow-up training that would be needed before conducting an evaluation.

Site Training

At one institution, the AWET considered the CAL to be part of auxilliary education and put a teacher in total charge of the project. That teacher is an experienced CSC employee and he chose an implementation plan that would permit all classes to have some time on the terminals each week. An inmate student was being trained as an electronics technician.

Prior to the site implementation, the same teacher worked through as many of the courses as possible and then provided an introduction for the teaching staff. The teaching staff were encouraged to try out the different courses, have their students registered and then allow access during class time.

A contract teacher at Leclerc Institution, worked through each math course (both English and French versions) before permitting inmate students to use a course. She also provided training for the other contract teacher who teaches the English language courses. Both teachers are responsible for registering their inmate students for each course and introducing the student to the mechanics of terminal use. After the introduction to the terminal, students work on the terminals under the supervision of a lab technician. The Leclerc school has three features not present at Warkworth that seem to facilitate CAL usage. The

features are a secure teachers room that is shared by all teachers, a technology room where language lab machines and computer terminals are located and supervision of terminal use by a technician, thus freeing the teacher of that responsibility. The teachers room provides a secure place for keeping instructor passwords and student accounts. The fact that all teachers share the room means that communications received from the various suppliers of computer courseware are located in a shared accessible place facilitating communication between the two teachers using CAL. The presence of the technician provides supervision of the equipment as well as supervision of the students.

A contract teacher at Springhill Institution, was the only teacher initially assigned to use the CAL courseware. Due to difficulties in installing equipment and the inexperience of the local CSC staff with on-line equipment, it was necessary to send someone with experience in prison education and this on-line CAL to Springhill. The staff at NHQ made the necessary arrangements to send an experienced CAL teacher from Warkworth to provide the additional training and problem resolution in order to permit this site to become operational by early November. During the November 24th site visit, a second contract teacher was given a brief introduction to and training in system use as she would be teaching for a eight week term. She chose to use the mathematics courses with French used as the language of presentation for supplemental work with her classes. Because of the location of the terminals inmates required permission to move between different areas of the institution, but the AWET was able to obtain the necessary cooperation of the guards for this pilot period.

A CSC employee and math teacher was the only teacher using the on-line terminals at Stony Mountain in the October to January time period. Another teacher, the Business Education teacher, who was on a 5 month contract used the system during the time of the pilot. It is not clear who provided the training for him as the CSC teacher did not return the questionnaire and was not able to be reached by phone. The business education teacher also used the microcomputers in teaching his classes.

Location of the Terminals

The location of the terminals within the school was another factor that related to the successful use of CAL. Warkworth located the terminals in the library as this room is available to inmates during some evening hours. Staff felt that with the library location the terminals would be able to be used in hours other than regular school hours. The librarian was sent for initial CAL training because the terminals were to be located in the library. The library location did not prove successful because of too few terminals, supervision problems and a lack of interest on the part of the librarian. Most inmates wanted a teacher present for consultation when they worked on courseware.

Stony Mountain chose to locate the terminals in a room that is an all-purpose room but also the room that is used by the students with less than a grade 5 placement. This classroom was selected because it is large and multi-purpose. As reported, this was a poor choice because of the conflicting demands for computer access from the math teachers students and the small group instruction needs of the literacy students. The terminals were later moved to a small classroom within the school.

Springhill chose to locate the terminals in a classroom that is used for the GED students and is under the sole direction of the teacher assigned to that room. This location denies access to the majority of staff and inmate students, who are in the regular part of the school classroom space.

Leclerc, which seems to have the most space of those schools involved in the CAL pilot, chose to locate the on-line terminals in the language laboratory. This location seems to be working well during the pilot stage, however staff say that with additional courseware and users the present site may not be adequate.

The arrangement that has caused the least disruption to the school schedule and least involvement with the management personnel is that used at Leclerc. This may be the result of the AWET's experience in the institution, his ability as an administrator, the presence of the lab technician, and the number of staff using the system. Locating the terminals where they are under the supervision of a lab

technician works well during school hours, but the terminals are not available for use during any other times.

Because each site must locate equipment in a location that seems best for the local situation, tolerance and flexibility will be required from all staff. One general recommendation is to locate equipment where there is room for expansion and where the equipment can be accessible to all teachers. Some terminals will require other peripherals so the area used should have expansion space as well as space for writing (calculating) beside the present terminals. The terminals should be available to students during evening hours to accommodate inmates who work at other jobs during school hours and to take advantage of the availability of the courseware.

Microsites

We visited three institutions that can be classified as microcomputer sites only. The three institutions were Millhaven, Collins Bay and Matsqui. Of the three sites, Collins Bay has the most equipment and two staff teaching courses using the microcomputers. The courses being taught are programming languages such as BASIC, PASCAL, and a course called Computer Literacy. Other teaching staff within Collins Bay expressed an interest in being allowed access to the microcomputers to be used in conjunction with their regular school courses; however they report that the machines are always tied up by the programming courses. They further say the budget for purchasing courseware is being used by the equipment and diskette needs of the programming teachers. Because they are not as computer literate nor as familiar with the sources of courseware as the programming teacher, they feel the need for outside assistance in meeting the needs for upgrading their curriculum needs. The staff teaching the programming courses say there is a great demand and interest in programming on the part of the inmate students because of the potential job demand for those with these skills. The enrollment figures support their claim.

Millhaven was in the first year of using microcomputers in their school and were experiencing the same problems of where to locate equipment, which students to permit on the equipment etc. The equipment was initially installed in a room

that was able to hold only two machines, but staff were awaiting changes that would allow more machines to be added in a different (larger) classroom. Two students were working intently on the day of our visit. Despite all the noise and confusion that prevails in the school, these students were absorbed in their work on the courseware. The Millhaven site is teaching computer literacy.

At Matsqui, the microcomputers were installed in the University classroom area. The microcomputers and the programming courses being taught were under the direction of an inmate student. The entire microcomputer and computer science program was his undertaking with the support of the institution staff. Shortage of equipment, uncertainty about the existence of programs due to provincial funding cuts were all problems in the fall of 1983 in B.C.

None of the microcomputer sites were using the equipment to teach courses in mathematics, English language arts, or other traditional school subjects. All of the microsites are offering a course called computer literacy which carries a provincial credit in some provinces. Computer literacy is probably an issue (course) that will be unnecessary in a few years. The influence of computers will probably be as extensive and commonplace as the telephone and educational authorities do not give school credit for telephone literacy. Until that time, if it captures the interest of educators and inmate students it is worth offering and should be continued.

Suitability of the System

On-line CAL is viewed favourably by all who used it. However, there remains a great need for more equipment and training to permit full use of the courseware presently available. There is also a need for additional courseware. Because the teachers are responsible for providing instruction to meet a set of provincial guidelines for a course, they will need assistance and guidance in determining the congruence between CAL course content and the content tested for the awarding of course credit in each curriculum area. Because the provinces may include topics at varying grade levels or in different course titles, determining this congruence may have to be resolved by the regional managers. Each region would need to determine the content that is available in CAL courses, the content that is

required for a course, the test that will be used and the mastery level or precentage score necessary for earning credit. To accomplish this task, the managers can work through the CAL courses or they can take the curriculum guidelines and the courseware developers description of the content to determine the congruence. This taks will determine whether there are any topics that must be taught by other techniques as well an determining the topics an instructor may assume are adequate covered by CAL. Once this task is completed, it would seem reasonable to award credit directly for mastering the appropriate CAL course.

An alternate solution, and one previously suggested, is to seek the judgement of the teachers in the on-line sites. The teachers who have used the CAL courseware could be given a few datas release time to complete this task. As these teachers already have some expertise, this may be the logical choice.

Is an on-line system feasible in the institutional setting? The answer seems to be yes, based on this pilot, the U.S. prison pilot and the other instances referred to in the review of the literature. However, to take advantage of the power inherent in an on-line system implies that additional courseware should be available.

The information from the microsites indicates that there is value in this technology also. The educational community in response to parent pressure, the power of advertising and in the U.S. the tax incentives for computer companies to make donations of equipment, has been forced to add microcomputers to the school curriculum. As an example, Katimavik public elementary school in the Carleton Board of Education opened a 13 terminal microcomputer room as part of its school program. University and community colleges make extensive use of on-line and microcomputers in teaching, in operating their internal management and administrative functions and in library operations.

The point is that both systems are useful. Teaching entire traditional school courses is best accomplished on-line to take advantage of the expertise that has already been devoted to developing the courseware. Generally this courseware has been developed by a team of curriculum developers in conjunction with subject

matter experts, teachers and programmers. As provincial credits toward a secondary school degree are available in some cases for computer literacy and computer programming languages, these courses should be supported. Accounting programs often called spreadsheets are widely available for microcomputers and would allow the needed application and practice in that subject.

As provinces develop courseware relating to their curricula, attention should be given by CSC to considering use of these materials. It appears that most of this courseware is being developed for microcomputers once good software is available.

ATTITUDES AND OPINIONS

Students

Students reacted favourably to the computer for a number of reasons. The computers seemed to give them a sense of control over their learning in allowing them to set their own pace. They enjoyed the immediate feedback CAL offers; they enjoyed working without embarrassment of errors, and they enjoyed the added status the computer brought to mundane math and language arts exercises. Lower-level students responded well to the removal of pressure to keep up with a group; advanced students were grateful for an opportunity to excel.

The following indicates student responses to a survey of attitudes towards learning on the computer.

TABLE 1. ATTITUDES TOWARDS LEARNING ON THE COMPUTER

Question	Response					
	Yes		No		No Response	
	N	%	N	%	N	%
1. Using the computer is a waste of time.	3	4.5	64	95.5	0	
2. I enjoy using the computer.	64	95.5	1	1.5	2	3.0
3. The computer makes the lessons interesting	58	86.5	6	9.0	3	4.5
4. The computer goes through the lessons too quickly.	25	37.0	40	60.0	2	3.0
5. I don't care when I make a mistake because no one is watching.	29	43.5	37	55.0	1	1.5
6. Using the computer makes me feel tense.	14	21.0	52	77.5	1	1.5
7. I would like to spend more time on the computer.	60	89.5	6	9.0	1	1.5
8. There is always a teacher to help me if I have a problem.	47	70.0	20	30.0	0	
9. The computer often breaks down.	17	25.5	49	73.0	1	1.5

Clearly, students enjoy the computer, find the work more interesting, and would like to have more time on the terminals. The fact that many felt the lessons moved too quickly was also expressed in interviews. It was suggested that insufficient time is given for review, that the basics should be introduced more clearly. One third of respondents maintain that a teacher is not always available, primarily due to the location of the machines. One-quarter felt that the computer often broke down, though this factor was cited by few of the students interviewed and in fact may be a combination of communication access and program design.

Neither changes in attitudes towards learning generally nor academic gains were measured, although the opinions expressed by staff and students were consistent with the findings from similar studies. Fahy (1980), in the study of Plato at the Alberta Vocational Centre found that students were less apprehensive of learning new material subsequent to the Plato program. Sandman (1978), in an evaluation of CAL programs at Minnesota State Correctional institutions concluded that "In general, the students showed improvement in all three attitude areas for which pretest and posttest data were collected: mathematics, reading, and learning on the computer. Much of this change could be attributed to an improvement in self-concept. Attitude changes toward learning on the computer were generally positive." (p. 54)

The math courses were used quite heavily and according to teachers, students seemed to improve in math. This may be due to the fact that math lends itself more readily to computer learning than does language arts which relies heavily on auditory perception and oral skills. As Fahy (1980) points out, "The difficulties in sequencing the material probably reflects the difference between the subject matter areas: math lends itself more readily to testing for proficiency and to sequencing; the diverse and various interrelated skills which together produce English proficiency are much more difficult to identify and order." (p. 29) Another explanation for the math courses being so heavily used may be the result of the factors discussed earlier such as location of the terminals, the grade level of the courseware, the amount of development the courseware had received prior to the pilot or that the teachers who were given training were, in most cases, math teachers. Student improvement in math, if it truly occurred, is probably due to the fact that math courses accounted for the majority of the CAL usage.

Teachers saw the computers as exerting a motivating influence on the students. Lacking hard data to substantiate the claim, staff nonetheless believed that students have improved in the skills taught on the computer. For one thing, computer work is far more intense and demands far greater concentration than does classroom participation. Also, the testing strategy requires a particular level of mastery on the tests before a student may advance to other higher level skills or courses.

Teachers

Part of the questionnaire completed by teachers was devoted to software (courseware) evaluation in an effort to ascertain their satisfaction with the way in which the computer curricula meets specific objectives. Teachers were asked to consider positive and negative statements regarding the math and language arts programs. Two language arts teachers and four math teachers responded.

For the most part, responses were positive. Not surprisingly, teachers in both programs viewed student enjoyment to warrant the highest rating. Teachers in both subject areas also feel that the curriculum covers relevant topics, allows for monitoring of student progress, teaches more quickly than traditional methods, and is compatible with the school's instructional program.

Neither group was favourable in their evaluation of the teacher's guide materials nor with the provisions for managing the instructional resources required in some of the courses.

The impression conveyed by staff was that the computer was introduced without having taken adequate account of the specific situational variables operating at each institution. Despite a strong positive attitude toward CAL, teachers identified several factors which have impeded the successful implementation of the program.

Only Leclerc has a separate room available for terminals with a technican assigned to monitor it. Because the terminals at Stony Mountain are located in the elementary classroom, their usage is seriously restricted. Warkworth has placed the computers in the library, which means that teachers must disrupt teaching to supervise and assist students.

Ideally, machines should be located where they can be supervised without disruption, and where tutorial instruction can also take place.

Staff feel that the current software does not necessarily address the lower-level skill needs of their students. They would like to see a wider variety of

curricula. In addition, teachers favour the development of programs which relate more closely to what is required at each grade level.

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Teachers do not feel that they have the knowledge to assign computer lessons to fit in with students regular work. Preferably, teachers would be able to access individual lessons which are relevant to the current needs of individual students.

At each of the institutions, lack of planning time was cited as a major problem. Already stretched in a multitude of directions, they feel that the program can only be successful if they are allowed some time to become familiar with CAN curricula.

Training was the central most important issue identified by teachers participating. They want advice on technical problems, scheduling, record-keeping, integration into regular program, student testing, selection of students and numerous other problems which have arisen in the course of implementation.

It is clear that in order for this kind of program to show maximum benefit, staff must become directly involved in curriculum assessment and integration of CAL into the institutional curriculum. This might be accomplished through in-service training components which will respond to questions of concern, and allow staff input.

CAL USAGE AND EXPENDITURES

Of interest to CSC staff is the cost per teaching hour of using CAL. At this point in time it is premature to address the question because as documented earlier all four sites are still struggling with adapting to a new technology.

Nevertheless, we do have data that will give some idea of what has been possible during this trial period. Table 2 displays the number of hours of instructional time by month and institution for the period July 1983 through the end of February 1984. This information was taken from printouts received from Cybershare, the supplier of the on-line services.

The data are presented by month and institution and include both math, BASIC and language arts curricula.

TABLE 2. CONNECT TIME (IN HOURS) BY MONTH AND INSTITUTION

Date		Leclerc	Springhill	Stony Mountain	Warkworth	Total
July	83	3	3		16	22
Sept.	83	113	8	36	242	399
Oct.	83	29	32	17	70	148
Nov.	83	128	64	91	214	497
Dec.	83	77	40	33	119	269
Jan.	84	102	35	119	161	417
Feb.	84	264	111	111	391	877
Total		716	293	407	1,213	2,629

In looking at the total hours of use by institution, Warkworth with 1,231 total hours also shows the most system use for each month. This is consistent with the provisions made at that institution for providing access during evening hours but is also due to the nature of the implementation at that institution. All staff were given limited access to the equipment during regular school hours. This permitted an opportunity for all inmate students to be exposed to the machines and the courseware. In terms of usage, this is admirable but it also created other problems. During one of the visits, a student expressed his frustration at not having enough time to work on the courses. He was quite emotional at the thought that there might finally be a way he could learn and yet he knew he needed many more hours than were available to him under the school operating schedule. The staff is aware of this and are trying several strategies to deal with the problem.

Leclerc is the second largest user with a total of 716 hours of CAL, followed by Stony Mountain and Springhill with 407 and 293 hours respectively. These data must be seen as purely descriptive information at this time and while it is natural to want to compare hours between institutions, it is not necessarily a valid comparison.

One question of interest was how much have the different courses within each curricular area been used. originally the evaluation team had believed that Cybershare would be able to provide the information needed to address the question of the number of hours by curricula, by course, by institution and by month. Unfortunately, this was not the case. Cybershare was able to supply total hours by institution according to their assignment of a code but they had not information as to which courses were used in the language arts area. The developer of the Compris courseware supplied their breakdown of the usage by course and institution and these data are presented in Table 3. In all institutions through January 1984, only 267 hours of English-language on-line instruction were used. The largest user was Leclerc with 140 hours, followed by Springhill and Warkworth with 64 and 63 hours respectively. One of the most noticeable aspects of the table is that Compris courseware has hardly been used.

The actual costs of providing the equivalent amount of instructional hours using contract teachers rather than this courseware can be estimated by assuming that one day of instructional time might at best be about 5 hours in the institutional setting. Dividing the total number of hours provided at each institution results in the following instructional days: Leclerc 143, Springhill 58, Stony Mountain 81, and Warkworth 242. Asuming that a teacher could be found who is certified to teach both intermediate (upper elementary) level math and secondary or early university level language arts in the English language and that the cost of a teacher is approximately $150 per day, the calculations are: Leclerc $21,480; Springhill $8,790; Stony Mountain $12,210; and Warkworth $36,390. This is $78,870 or about $80,000 for a 6 month period.

TABLE 3. NUMBER OF STUDENTS (N) & TIME IN HOURS BY COURSE & INSTITUTION (SEPT 83 - FEB 84)

Compris Course	Leclerc		Springhill		Stony Mountain		Warkworth		Total	
	N	Time	N	Time	N	Time	N	Time	N	Time
Grammar	18	79	3	5	1	1	21	39	43	123
Reading	7	8	11	8	1		6	9	25	25
Critical Thinking I			4	15			3	3	7	18
Critical Thinking II			3	8			1	1	4	9
Report Writing I	11	23					7	11	18	34
Report Writing II	1	1	26	26					27	27
Literature			2	1					2	1
Punctuation	9	29	2	1			1	1	12	30
	46	140	51	64	2	1	39	63	138	267

Data received from course developers by telephone: No spelling data available.

The actual cost of obtaining the software are as follows: Math $620/month all sites: BASIC, $100/month all sites; Can/8 authouring language $300/month all skites; Language Arts $40,000/site or $160,000. in perpetuity but limited only to the four sites. (Software generally has a life of 5 years according to figures in Computer Magazine).

Expressing these figures for 6 months we obtain the following: Math $3,720; BASIC $600; Can/8 $1,800; Language Arts $16,000 ($160,000 divided by 12 x 5 yr./6 mo.) for $22,120.

There are of course hardware and communication expenses associated with this technology. Some of these charges are one-time charges associated with installing service, purchasing hardware and others are on-going. These hardware and communication costs are as follows:

$1,000/terminal, keyboard and stand or $12,000; communication equipment (Memotec multiplexors and Datapac lines) $4,249; computer processing with $375/month for system analyst services; $1,200/month for 12 terminal ports; and communication charges of $500/month. It is difficult to know what to expect regarding communication charges because actual billing depends on the volume of use. July 1983 quotations were $1.25/hour and March 1984 quotations were $0.48/hour. The $500 is based on 1,000 hours for the four sites at $0.50/hour.

Expressing the costs for a six month period yields the following: Terminals $1,200 (12 terminals for 5 years or 10 half-years); communication equipment $25,494; ports $7,200; system analyst services $2,250 and communication charges $3,000 or $39,144. For the 6 month pilot time period the technology approach is estimated to have cost $61,264 ($22,120 + $39,144), while using additional teachers would have required $78,870.

In summary of the cost and usage data, we urge that the findings from Warkworth and Edmonton be remembered while looking at the dollar figures. The purpose of the entire project is to aid student learning in an individualized teaching

system. The learning of school subject matter requires a live instructor to talk with about the aspects that a student does not understand and/or a "parent" substitute for a student to share his/her "report-card", excitement or discouragement with. Good instruction and learning always requires sound subject matter, practice, training and communication.

SUMMARY OF THE IMPLEMENTATION

All institutions expressed a desire to have additional terminals, both on and off-line. Only Warkworth allows use of the computers after hours, and only Springhill and Stony Mountain encourage typing as a prerequisite to aid in keyboard familiarization. Stony Mountain predicts that additional machines will be required when a better location for the terminals is found. This will allow expansion of the program to other grades and other subject areas. Warkworth is scheduled to capacity, but would increase enrollment further given more machines, better software and improved supervision of the terminals. Leclerc foresees an increased demand for hardware as more French-language software becomes available and if higher need for other math and English courseware is expressed by all sites. At 3 sites, computer downtime and other technical problems were minimal. In one site, an inmate student obtained teacher-level access privileges and the access to that site was shut down for 1.5 weeks. Math teachers had few problems enrolling students on the system, and math students had little difficulty learning how to operate the machines.

There was, however, a clear communication problem. When problems did arise, teachers were unsure how to proceed or who to contact. One teacher at Warkworth for example, complained that he tried to use the language arts program for 1.5 weeks in January, but discontinued because he "couldn't get it set up". Nor were teachers able to determine what programs could be accessed through the on-line terminals. Generally, teachers faced with problems of a technical nature were unsure of who to turn to for advice.

Though the CAL program has not been successfully integrated into the regular curriculum, teachers have succeeded in using it as an effective supplement. While the individualized approach necessary in a prison classroom does leave room for an add-on curriculum, teachers at all sites are anxious to improve their integration of CAL. The possibility of granting credits for math and language arts computer courses was proposed.

In keeping track of student time and progress on the computer, teachers relied solely on records kept by Cybershare which are only available for the OISE mathematics courseware. Most institutions did not have a well-organized off-line record-keeping system that would allow better control of student's work. Improved record-keeping both by Cybershare, Compris and staff would allow a teacher to better monitor progress, by indicating if a student is spending time chiefly in testing (a sign of rapid progress) or in study (a sign of slower progress), or if a studentis in a cycle of failure-study-test-failure. Provision of printers, planning time and one person responsible for machines and introducing and enrolling inmate students would all be helpful.

RECOMMENDATIONS

Essentially, the objectives of CAL, as stated in the overview of this report, have all been met to some degree. Most important, both teachers and students have developed a favourable attitude toward using the computer as a teaching tool. However, CAL staff have expressed a desire to improve their knowledge of computer uses in education, to improve their understanding of the computer-based curriculum itself and to improve their ability to integrate CAL into already existing curriculum.

Based on the findings of this study, the following recommendations are proposed as potential strategies for improving CAL implementation and to enhance its ability to meet defined objectives.

1. Teacher training and staff training must be provided as soon as possible. Teachers and staff needed to know how to use the equipment, how to access the courseware, the scope of the courseware, how to match the courseware to the requirements for provincial certification, how to restructure their time and role as a professional and how to resolve problems with any of the above.

2. Someone with an understanding of the power and scope of this technology in a school setting must be put in charge of this project and BE ABLE TO DEVOTE TIME TO IT. Preferably, this person should be an experienced educator, familiar with the technology and the institution (prison) setting.

3. Printers must be attached to the present terminals to allow reports to be generated when and where they are needed. Additionally, to take advantage of the options available in the present courseware in mathematics, language arts and BASIC, printers are required. For example, the output of a course in report writing should be a report. This requires a printer to physically produce the report that is composed and visible on the screen of the terminal.

4. Additional terminals with keyboards, stand and printers should be added. One of the major classroom/scheduling problems encountered in all on-line sites was too few terminals for too many students and teachers as well as terminal assessability (inaccessability).

The recommendation with regard to additional terminals is meant to address three issues. Additional terminals are needed in the school area to permit inmate students enrolled in school programs to have access time to the courseware. Further, the terminals must be located such that they are available for all curriculum areas.

The second issue is that additional terminals are required so that they may be available in a variety of locations. The advantage of on-line computer courseware is that it is available 24 hours a day, 7 days a week. A terminal has been successfully installed in a living unit at Edmonton Institution and at Matsqui Institution and should be considered for these sites also.

The third issue concerns long range thinking with consideration being given to a terminal capable of supporting audio and colour for instructional use in geography, science, art/music and language training. The present terminals are adequate for the existing courseware but it is not known if the present keyboard supports the printing functions.

Note: To facilitate terminal use and minimize hardware problems, instructions on how to use the machines should be as non-verbal as possible. A good quality picture (illustration) of what to do should be laminated and then attached to the top or side of the terminal/printer.

5. Courseware recommendations:

Program developers should be encouraged to improve their manuals and see that the provision for managing the instructional resources required is included in the manual. For example, if a dictionary or geometric solid is required during the use of a particular course, then this should be clearly stated in the on-line introduction to that course and in the teacher guide materials.

Program developers should be encouraged to reduce "bugs" to improve their product and to do so in consultation with CSC teaching personnel.

Additional courseware is needed to permit expansion of CAL to higher level math, lower level English, science, geography, art, language training and games that require thinking as well as perceptual and small muscle co-ordination skills. The language training courseware for native people such as the Cree, Ojibway, Micmac, Inuit and others probably does not exist, but there seems to be a great need for basic literacy training for these groups. One place to start could be the development of courseware that combines the visual, auditory and kinesthetic (finger tracing or light pen) senses in learning to read and write.

6. English teachers already employed by the institutions need to be given the machines, time and role of evaluating the courseware intended for their curriculum area. Because English teachers in general have the least exposure to technology of this kind, they may require more training than the math teachers and additional support from the technical people in their institutions.

7. Alternative strategies need to be examined which will maximize staff input and provide a forum for intercommunication between teachers, CSC personnel, program (courseware) developers, Cybershare, Cybernex and other persons with expertise in the area of CAL education. One strategy would be to provide a CAL newsletter.

8. Consideration should be given to allowing students to earn course credit for successfully passing appropriate CAL courses.

9. An integrated teaching, testing and data management system is needed. The OISE math courseware includes such a system, but it is not known if their system is adequate for the institutional setting. The Compris courseware did not have such a system during the time of this study and Compris Inc. should be encouraged to develop one.

APPENDIX A

IMPLEMENTATION SITES

A1 Stony Mountain

A2 Warkworth

A3 Leclerc

A4 Springhill

AI STONY MOUNTAIN

A. THE REGULAR PROGRAM

Stony Mountain institution employs 7 teachers for its academic program: 2 are fulltime institutional employees, 3 are on 9 month contracts from the Winnipeg School Division No.1, and 2 are on 5 month contracts from the Correspondence Branch of the Manitoba Department of Education.

There are a total of 65 students in the school. Students are pretested using Cooperative School and College Ability Test (SCAT) to determine placement into one of 5 classes: Grade 0-7, 8-9, 10-11, 12 or 10-11-12 business education. Business education students are enrolled in correspondence courses only, including computer literacy.

Students in grades 0 through 11 may complete a grade within a 5 month term, from September to January or from February to June. Two 5 month terms are required to complete Grade 12. The Manitoba Department of Education approves Grade 12 standing.

B. IMPLEMENTATION OF CAL

EQUIPMENT - There are 8 computer terminals at Stony Mountain Institution. Four microcomputers, 2 Vic 20s (one equipped with a printer) and 2 Osborne ones are located in the business education classroom, and are used to teach computer literacy. Four on-line terminals, 3 Cybernex and 1 Vucom 404 are located in the grades 0-7 classroom. These terminals are used to teach math to Grades 0-7. The on-line machines were recently serviced when only 3 of 4 terminals would operate at one time. Thus far, the Business Education teacher has repaired any breakdowns to the microcomputers.

SCHEDULING - 1) off-line: The microcomputers are used by students in the business education class following the computer literacy course through correspondence. Students are scheduled during the time they are taught by the person responsible for computer literacy - 2 days per week 8:30 - 11:30 a.m. In addition, they are allowed to work at the "BASIC" program whenever the on-line terminals are not being used for math students. When working on BASIC, in the grade 0-7 classroom, their supervision is the responsibility of the teacher in attendance at that time.

2) on-line: As mentioned above the on-line terminals are located in the grade 0-7 classroom, therefore the math teacher need not follow any specific procedures for scheduling the machines. The students are taught math for 1.5 hours each morning and 1 hour each afternoon; during this time there are always 4 students working at the terminals. These grade 0-7 students are also permitted to work on the math program at other times during the school day such as during

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spares or when work for other teachers is completed.

CURRICULA - A summary of computer use at the time of our visit is as follows:

Curricula	Grade Level	No. of Students	Teachers
Math (on-line)	0-7	15	W. Alexander
Computer Literacy (off-line)	10-11-12	12	D. Lewis
		T=27	

INTEGRATION INTO REGULAR PROGRAM - Off-line. Computer literacy is a self-contained correspondence course. Students are introduced to the computers and then work on their own through course materials and on terminals. Each student has his own diskette and can then apply what he has learned by writing his own programs.

On-line. Though CAL is foremost an add-on to the classroom curriculum, the individualized approach necessary in a 0 to 7 class does allow for some integration. Because the computers are placed in the students' classroom, the teacher is available at all times to preview work before a student is sent to the computer, or to review material as a student completes a unit.

Although the regular math curriculum includes more material than is covered in CAL, the computer does provide instruction in essential areas (i.e. addition, subtraction, multiplication, division, factoring). It's presence does facilitate the teacher's individualized approach, providing additional practice to slow learners, and allowing more advanced students to progress forward in mathematics.

SELECTION OF STUDENTS - The grade 0-7 math students are free to choose to participate in CAL or to do "paper" math exlusively. To date all have chosen to use the computer.

RECORD KEEPING - Neither the math nor computer literacy teachers keep their own records of computer use, although the math teacher receives Cybershare's summary report. There are no other formal testing procedures or strategies for monitoring progress. In the math class, 50% of students are transferred out of the institution within a 5-month period, and only a small number complete the program as far as "factoring". Mathematics students who move to Grade 8 no longer have access to computers.

C. STUDENT ATTITUDES

Students were asked to complete a questionnaire designed to determine general attitudes towards working on the computer, attitudes towards the specific computer courses, and opinions

concerning how the computer should be used in prision education. responses to Part I of the questionnaire, attitudes towards working on the computer and student opinions regarding computer use are pooled and are presented in the summary section of this report.

Twenty students responded at least partially to Part II of the questionnaire. Although the Basic Level (0-7) students had difficulty reading and completing the questionnaire, they nonetheless conveyed a clear message of approval for CAL. They like the privacy of working on a computer, they like working at their own pace, and they find that learning is easier and more interesting. While they did admit to some problems in operating the terminals and in doing the programs, their comments are generally positive.

STUDENT ATTITUDE SURVEY RESULTS - Some typical questionnaire responses are listed as follows:

Overall, what do you like about learning on the computer?

Math students (on-line):

"I like the computer because I can work at my own rate and speed and therefore I learn more."
"It's easy to learn from."

Basic Students (micro):

"Fun-Interesting-Privacy-Informative-The computer has undying patience with me."
"Work at your own pace; exciting because it's different; one-to-one basis."
"They show you not all learning is boring."

Overall, what do you dislike about learning on the computer?

Math students:

"The keys - I don't know how to use them yet."
"I felt there was not enough instruction on the basics. Not enough variety."
"Not enough time to work on them."
"I wish I could learn other subjects."
"Why does the terminal keep saying try again, try again..."
(This was caused by a program bug which has now been corrected.)

BASIC Students:

"I feel there are too many codes and such. It takes so long to write a decent program."
"All the things you have to remember."

Please write anything else you'd like to say about learning on the computer.

Math Students

"I find beginning courses were too in-depth."
"It exercises the mind; you get into your work better and learn how to understand modern equipment."

BASIC Students

"The computer is greatly enhancing our lives and our educational programs."
"I think that computers in conjunction with teachers are an asset to learning, but I think that class participation is also necessary to help understand some aspects of course materials."

STUDENT EVALUATION OF COMPUTER COURSES - Students were asked to assign a grade to the computer courses they are taking and to explain their evaluation.

Course	Grade	Frequency	Comments
Math(on-line)	A	3	
	B	1	
	C	1	
	F	1	"Parce que l'on ne m'a pas donne un programme a mon niveau."
BASIC(micro)	A	3	
	B	4	"I feel it is a very good introductory course...It's challenging." "Gave me a good in-depth understanding of computer acessories (software) and programming."
	C	1	
	F	1	

D. TEACHER ATTITUDES

In Stony Mountain, because of the location of the terminals and the fact that training personnel were unable to visit as a team (because of institution conditions during the summer), only the grade 0-7 math teacher has had the opportunity to give on-line CAL an appropriate trial.

Other teachers interviewed expressed an interest in having access to on-line machines if there is courseware available for the classes they are assigned and if they have an opportunity to try the terminals themselves before they have to show students how to use them. They were supportive of the Business Education teacher's efforts to introduce inmate students to the location of keys on a typewriter. The standard typewriter keyboard is the convention adopted for computer terminal keyboards and those grade 0-7 students who could read were totally unfamiliar with the location of keys. The Cree language teacher felt that the provision of Cree written conventions for practice would provide a greatly needed literacy support for native inmate students. (Many native students do not have any training in written language.)

In terms of actual operation of the machines by the students who could read, there appeared to be a fairly smooth functioning of technology. In both the on-line and micro groups, student complaints were largely restricted to problems arising from program errors.

Technical Concerns

The major technical problem occurring during the time of the on-site visit was that only 3 of the 4 on-line terminals would operate at one time, though that problem has since been resolved.

Curricular Concerns

The math teacher commented positively on the effectiveness of the CAL program. He has found that the program adapts well to a wide range of abilities and that student math skills appear to have improved since the introduction of the computer. He also recommended that for elementary level students, a more concise, simpler presentation would improve the program. At the beginning of each unit, the introduction of new skills should offer greater opportunity for review. The research team also interviewed the English teacher at Stony Mountain who had only been given time to scan the paper handouts (teachers guide) accompanying the Compris language arts program. In his opinion, the material is somewhat beyond the ability of the average student in his classes. The typical prison student does require instruction in basic skills, but the content must also appeal to adults who are 18 to 50 years of age. His feeling is that the program is designed for regular schools and requires some modification for use in institutions.

Administrative Concerns

The staff at Stony Mountain identified the following problems which have impeded their implementation of CAL.

Location of machines: The major reason the on-line terminals are used by a limited number of students is that they are poorly located. While their location may be advantageous to the Grade 0-7 math class, it means that the terminals are essentially off limits, on any regular basis, to other classes. Teachers find the present arrangement of allowing access to micro students disruptive in that they must accept responsibility for 4 additional students, and are unwilling to expand this arrangement to other classes.

Time: The teacher involved in CAL also teaches other classes on a full-time basis, and thus has little working time available to devote to planning. He feels he could make better use of the computer if he were given time to become more familiar with the program and to handle the extra work it creates.

Training Both the math and Business Education teachers expressed a desire to pursue professional development opportunities. The math teacher is particularly anxious to pursue training which would enable him to answer several questions regarding CAL. How should it be integrated into the regular curriculum? How should students be tested at various stages during the course? What are the objectives of CAL? How can the manuals be better utilized? What other software is available to teach math?

Long term plans to train personnel must give consideration to the fact that 5 of the 7 teachers at Stony Mountain are on contract. Contract teachers are not permitted to remove any materials from the institution: this means that teacher's manuals, diskettes, books, etc. must remain in the school. Because of institutional rules, access to the school is permitted only during specified hours. Therefore, any curricular materials not part of the resources of Winnipeg School Division Number 1 or the Correspondence Branch of the Manitoba Department of Education are not available to these teachers. Staff regards this to be a serious problem in attempting any follow-up of innovations at the school.

A2 WARKWORTH

A. THE REGULAR PROGRAM

The Warkworth school serves 125 students from grades 0 through 12. Students are tested using Gates-MacGintie and the Cooperative School and College Ability Test (SCAT). After testing they are placed in one of four groups: 0-5, 6-8, 9-10, 11-12. The school has six month semesters - January to June, and July to December. The Ontario Ministry of Education approves courses for Ontario high school credits, according to Carl Roe, the present acting supervisory officer for the Eastern Ontario Region of the Ontario Ministry.

There are seven teachers, two employed by Correctional Services Canada (CSC) and the others are on contract from Loyalist College in Belleville. University courses are available through correspondence.

B. IMPLEMENTATION OF CAL

EQUIPMENT - Warkworth has 3 Cybernex terminals - 2 are located in the library; a third, in George Stephenson's (the supervisor) office, is primarily for teacher use. There are no printers. Servicing of machines is provided by Cybernex and is paid for by CSC. There was one instance of an inmate gaining access to teacher passwords and the institution's access was shut down for one and a half weeks until the problem was resolved.

SCHEDULING - One teacher is responsible for scheduling computer time and assigning codes to students. Teachers can reserve the computer terminals during their teaching time and are responsible for supervising their use. The scheduling results in a student having access only once every two weeks during school hours. In addition, individual students can reserve time for an additional 1.5 hours in the evening when either the librarian or a regular teacher is available. Initially terminal use was quite heavy in the evenings but later in the winter term students reserved the terminals only on the evenings that a teacher was supervising the terminals. With the exception of one or two more advanced students, students do not reserve time when the librarian supervises the terminals. In addition, individual students can reserve time after regular school hours. The scheduling system results in a student having access only once every two weeks during school hours. The provision of allowing students to reserve time for evening use makes the terminals available an additional 1.5 hours. With the exception of one or two students, most students only schedule tim if a regular teacher is available in the evening. When the librarian is the supervisor of the terminals, the students do not bother reserving time.

INTEGRATION INTO REGULAR PROGRAM - The computer is used as a supplement to the regular math and language arts programs. The content of the regular programs is not altered by the addition of the computer to the school. Whatever benefits students may derive from computer lessons, the main concern of teachers is to ensure that students master classroom material. The responsibilities of supervision and scheduling the computer has created considerable additional work for staff.

CURRICULA - The following outlines the grade levels and number of students currently (as of February 1984) working through various curricula on the computer.

Curricula	Grade Level	No. of Students
OISE Math	0-5	5
	9	2
	10	1
	11-12	7
Compris Spelling	0-5	1
BASIC	10	3
	11-12	3

This study also collected information from 2 teachers who used the computer during the fall semester:

Curricula	Grade Level	No. of Students
Compris:		
Grammar and Spelling	6-8	12
OISE Math	10	10-15

SELECTION OF STUDENTS - Students are selected on a voluntary basis - any student requesting computer time is scheduled as long as he is in a class participating in CAL. Only students requiring close supervision are refused. Only one teacher places a restriction on computer use - that students performing at the highest and lowest academic levels be given priority.

RECORD KEEPING - Student progress is monitored through the record keeping system. Mastery of a unit is controlled by the strategy built into the computer programs. Thus, although some students may move more slowly through a program, they cannot "fail". Teachers maintain that although no student has ever quit a computer course, only one student in a class of 15 is able to work a program through to completion. This is due primarily to the fact that 75% to 100% of the inmate students are transferred or otherwise leave the school during a semester. With the exception of absences due to illness, visitors, classroom tests, etc...attendance on the computer is literally 100%. It is unheard of for a student to "skip" computer time.

C. STUDENT ATTITUDES

Students were extremely enthusiastic about the computers generally, regardless of the program in which they were registered. While it is inevitable that students must have experienced some technical difficulties or faced some frustrations in understanding the work presented, they were reluctant to admit to any such problems to the research team. They seemed to believe that any problems identified by the study would lead to a cut-back in CAL. Their only complaints were that they would like more computer time, more terminals, an opportunity to try microcomputers, and a greater variety of software.

STUDENT ATTITUDE SURVEY RESULTS - The questionnaire was completed, at least in part, by 27 students including several who were enrolled in language arts during the fall terms. Typical attitudes expressed by students in response to questions presented in the survey are as follows:

Overall, what do you like about learning on the computer?

"Can take my time and learn at my own speed."
"It keeps my interest."
"Helps you learn quicker."
"It gives me a way of keeping up with the times."
"Not having a teacher overlook us all the time."
"It makes the work easier to do."

Overall, what do you dislike about learning on the computer?

"You need more time on the computer. Need more programs and a basic introduction in computer use."
"The same course constantly."
"It gets kind of frustrating, like when you punch in the right answer, but it says you're wrong."
"I think it doesn't go over your mistakes well enough and also at times the lessons go by fast."
"When terminals go off without warning."
"Air time on the computer is far too short."

Please write anything else you'd like to say about learning on the computer.

"It's my buddy."
"It's a good idea."
"Other subjects should be programmed on the computer."
"What I like is that it explains itself."
"We should have more courses on the computer."
"I would like to see more written work."
"There is a great lack of programs for Grade 12."
"It's relaxing and enjoying and very educational."

STUDENT EVALUATION OF COMPUTER COURSES

The following illustrates the grades students assigned to computer subjects and some of their accompanying comments:

Course	Grade	Frequency	Comments
Math	A	11	"Good program." "I do very well on this math." "The computer explains how to do the questions in very good detail." "I do very well in math now."
	B	7	"It is a good way of learning." "It is a self-taught process." "When you make a mistake, the computer closes down and tells you to ask the teacher."
	C	1	"Could go into more detail about the lesson."
Language Arts	A	1	"I have really improved in spelling."
	B	2	"I learned a lot in a short time." "It didn't explain some things very well."
	F	1	"Not enough details."
BASIC	A	1	
	B	1	"It sometimes says your wrong when actually you're right."
	D	1	"It seems to be more of a math course. One major problem is that there are no reference books to refer to when a problem arises."

D. STAFF ATTITUDES

Despite some problems in implementing the CAL program, teachers at Warkworth indicated a generally favourable attitude towards the computer, and are committed to its continued use at their institution. In their opinion, the primary objective of the program is to "tutor", "reinforce", and "enrich" students in Math and Language Arts and this objective has been achieved to their satisfaction. The computer is viewed to be an add-on to their regular curriculum, an additional tool to supplement the

methods of regular tutorial instruction. While the introduction has caused considerable frustration, teachers are favourably disposed toward the CAL program for one reason - the positive response on the part of students.

Technical Concerns

The students appeared to have few problems in learning how to operate the machines and only occasional problems in working through programs. One teacher complained that he attempted to use the reading comprehension course, but was unable to get the program set up. Other complaints included not knowing who to notify or seek help from when a problem did occur and not knowing exactly what programs are available on the system.

Curricular Concerns

Teachers expressed three major curricular concerns. First, they indicated that they have not had time to work through the various curricula. As a result, they are not sufficiently familiar with the curriculum content to successfully integrate it into the regular programs let alone "evalute" its usefulness.

Secondly, teachers generally felt that they could not accurately assess the quality of curricula without proper training in their use. There is a strong feeling that the machines were "dropped on our doorstep". The staff were adamant that the use of computer curricula to learn math, language arts and programming has definite potential, but that potential cannot be realized until teachers are offered the time and training required to gain some expertise.

Thirdly, specialized software, appropriate to prison education needs to be developed or acquired. Classes in prisons are unique in that they are comprised of a wide range of ages, abilities and backgrounds. Programs must be of interest to the adult inmate who reads at a Grade 2 level, but must also offer material which will stimulate the advanced student.

Math Curriculum - The math curriculum was generally favoured over other curricula used at the institution. The overall quality of the lessons was considered to be good. The grade 0-5 math teacher was very positive about the program. He found that the program adapted well to the individualized approach essential in teaching a five level class. Most importantly, use of the computer has definitely improved the attitude of class members towards math, a group which consists of "life-long underachievers who are fearful of mathematics".

The most serious problem with the math curriculum, according to teachers, is the games. Students have learned how to bypass the instructional units and go directly to the games. It is also impossible to maintain the confidentiality of student ID numbers: students "borrow" codes from others who are eligible to play games. Because games do not have a time limit, (which the teachers handbook says is limited to five minutes)and the computer progress reports indicate that students are spending a great deal more time on games than on math, teachers would prefer to eliminate the games completely, or somehow enforce the stated restrictions.

Teachers have discovered that several of the units do not allow for review. Once a student has passed the postest, the student cannot back-track. The sequential nature of the program does not allow individual topics to be assigned for remedial purposes.

One staff member also pointed out that the section on "reverse flow-charting is poorly presented. Finally, the teachers feel that the program falls short of providing for the senior student. As there are many upperlevel math courses, it should be cost effective to supply computer math at this level and let the teacher be the resource to consult when learning difficulties occur. OISE math is at present restricted to the intermediate level.

Language Arts Curriculum - In the opinion of one teacher, students require a great deal more teacher attention for language arts than they do for math. In answering questions based on the reading comprehension passages, students must use specific key words or the answer is rejected. Given the requirements (objectives) set forth in the Ontario Ministry guidelines, the lack of time to work through the courses, the difficulty in teaching in one room with inmate students on computer terminals in a different room, (a teacher is responsible for inmate and property safety), having students frustrated by software, the teachers task is very difficult.

However, these problems have not damaged the enthusiasm of students. They are as eager to work through the language arts curriculum as they are in math. For this reason, teachers believe that given better circumstances, students could be making more improvement in language arts than they are at present.

BASIC Curriculum - Six students in grades 10 to 12 business math are working through the BASIC computer course on their own time. Although several other students have requested to do the course, the computers are already scheduled to capacity during after-school hours. The program itself has presented few problems. Students require a minimum of teacher assistance and are working through the program.

Administrative Concerns

Administrative concerns revolve around four issues - the location of the terminals, the number of terminals, lack of teacher time and lack of teacher training.

Location of the machines: The two terminals available to students are located in the library. Students are scheduled during class time and their supervision is the responsibility of their teacher. Consequently, the teacher must periodically leave a class of 10 to 15 inmates to supervise students working down the hall, and must interrupt classroom teaching to assist if curricular or technical problems arise.

Number of Terminals: Additional terminals are required so that students may be scheduled as a class and to allow students sufficient time to work through a program. Microcomputers would also be desirable so that students could work on remedial type programs as well as register for correspondence courses in programming.

Teacher time: All students at Warkworth confessed that they are unable to devote the time to the program that it deserves. Before scheduling students on the system, they would like to have had time to work through the programs themselves. They are now becoming familiar with the software as they work through it with students. For this reason, they have not been able to integrate the computer curricula into their regular program, to examine objectives and to seriously study the problems associated with implementation.

Teacher training: The general feeling at Warkworth is that the terminals were delivered without guidelines. They have implemented the program without a clear understanding of how it should be integrated with the regular program. They are not sure how to deal with technical problems and find it difficult to schedule and supervise students in two locations. Teachers feel that they need to attend workshops and training sessions which will assist them in successful implementation.

A3 LECLERC

A. THE REGULAR PROGRAM

The educational program at Leclerc serves 102 students - 21 enrolled in CEGEP courses, 57 at the high school level and 14 "Basic" students at varying levels of elementary instruction. All students are tested with Cooperative School and College Ability Test to determine language and grade placement. High school students are grouped together according to subject - i.e. all math students, grades 8 - 12, are in the same math class.

The academic year is on a continual 12 month schedule such that students can work through the curriculum for each grade level on an individualized, continuous basis. All courses follow Quebec Ministry of Education guidelines.

The two high school teachers involved in the CAL program are on one year contracts from College Marie-Victorin, supervised by Commission Scolaire Regionale Blainville-deux-Montagnes, Services de l'Education des Adultes.

Teachers from CEGEP on three month contracts, come weekly to teach Math, English, French, Psychology, Sociology and History.

B. IMPLEMENTATION OF CAL

EQUIPMENT - Leclerc has 5 computer terminals - 3 on-line Cybernex and 2 microcomputers (Apples) equipped with printers. Four of the terminals are located in the language lab: one of the micros is in the Administrator's office but is also available to students. The on-line terminals are used primarily by high school students following the Math and Language Arts programs; the micros are used primarily by CEGEP students learning computer programming.

Thus far, breakdowns have been limited to problems with telephone cables during the initial stages of installation.

SCHEDULING - Teachers reserve the computer during their teaching time i.e. 3 students are sent to work on the Math program during Math class. Students are supervised by a full time lab technician, though teachers are responsible for scheduling, assigning codes and introducing their students to the mechanics of computer use. Terminals are only available to students during school hours - 8:30 to 11:30 a.m. and 1:00 to 3:30 p.m. Monday to Friday. According to staff, language arts students average 4 to 6 hours per week of computer time. An estimate of the average time per week for math students is unavailable.

CURRICULA - The following programs are currently used as part of the CAL program at Leclerc:

ON-LINE TERMINALS

Curricula	Language of Delivery	Grade Level	No. of Students
OISE Math	Eng.	8 - 10	17
	Fr.	8 - 12	17
Compris	Eng.	8 - 12	20
		MICROS	
BASIC	Fr.& Eng.	CEGEP	16
Other software: vocabulary, fractions, etc...	Fr.	used by both elementary and high school students when scheduling permits.	

INTE GRATION INTO REGULAR PROGRAM - For both Math and Language Arts, the CAL program is used as an add-on to the regular high school curriculum. In both subject areas, the regular curricula are specifically defined and outlined in manuals provided by the Quebec Ministry of Education. To a certain extent, the ministry's guidelines and CAL material overlap, though the latter is viewed primarily as a tool for supplemental instruction. Beyond instructing students on how to use the computer, the role of the teacher is one of consultant and guide. Though students may require the teacher to clarify or explain subject matter, the lab technician can solve most curricular or technical problems.

Each week a representative of the regional school board arranges for students to write achievement tests in one or more "modules" of the Quebec curriculum. It has been difficult for the teachers to determine which part of the math units match the modules to be tested.

SELECTION OF STUDENTS - As students enroll in the school, they are required to work on the terminal for a minimum of one hour on either Math or Language Arts. Although a large number are intially somewhat reluctant, almost 100% choose to continue when they understand how to operate the machine.

RECORD KEEPING - There are no pretesting procedures in either Math or Language Arts. All students begin the program at the same point. In monitoring student progress, teachers examine Cybershare records to identify students who are spending an inordinate amount of time on a given level of a course and provide additional instruction so that the student can move forward. An attendance record of student time on the terminals is kept in the language lab and indicates that student attendance is near perfect. Neither the math nor language arts teacher is aware of any student having "quit" the CAL program.

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Only a small number of students, 10% to 15% actually complete a computer curriculum due to the high rate of transfers.

C. STUDENT ATTITUDES

Students at Leclerc did not differ from their peers in other institutions regarding their attitude toward computer work. They enjoy working at their own pace, getting immediate feedback, and seem to feel more comfortable working at the terminals than in the classroom. The group felt that their math and language arts skills had improved significantly.

STUDENT ATTITIDE SURVEY RESULTS

Student attitudes are reflected in the following comments selected from student questionnaire responses:

Overall, what do you like about learning on the computer?

"The way courses are presented."
"That you don't need a teacher."
"It makes it easier to learn because it's more interesting."

En general, qu'est-ce qui te plait de'apprendre avec l'ordinateur?

"Tout ce qui est possible."
"Ca informe beaucoup et je comprend plus."
"C'est facile d'apprendre tres vite."

Overall, what do you dislike about learning on the computer?

"Absolutely nothing."
"Nothing, other than not having enough programs."

En general, qu'est-ce qui te deplait d'apprendre avec l'ordinateur?"

"Maths - monque d'explications."
"Je trouve qu'il n'ya pas assez d'ordinateurs pour nos besoins."
"Parce qu'il est toujours en anglais et j'amerais l'avoir en francais."
"Il n'y a pas assez de cours."
"Il marche jamais."
"Toujours les memes programmes."

Please write anything else you would like to say about learning on the computer.

"It's fantastic, we need many more on-line programs."
"It should be used in more subjects."

Ecris ce que tu aimerais dire au sujet d'apprendre avec l'ordinateur.

"Il devrait y avoir autant de cours en francais qu'en anglais."
"J'aimerais qu'il utilise des termes ou des symboles assez simples pour les debutants."

STUDENT EVALUATION OF COMPUTER COURSES

Students evaluated the CAL courses and offered comments as follows:

Course	Grade	Frequency	Comments
Math	A	9	"Ca m'aide beaucoup." "Tu n'est pas oubliger d'attendre aupres le professeur pour travailler." "It has made it a lot easier for me to understand and learn faster."
	D	1	"It's not that advanced."
	E	1	"J'ai depasser la matiere que il enseigne."
	F	3	"Tres peu de donnes."
Language Arts English	A	3	"Since I started, I've improved my punctuation and my grammar." "The time I've spent on the computer has helped me a great deal."
	B	1	
	D	1	

D.STAFF ATTITUDES

Although the CAL program at Leclerc has met with some setbacks, teachers feel that they have been successful in solving most implementation problems that have arisen thus far. They are very much encouraged by the attitude of students, which they perceive to be the major asset of the CAL program. Because of the students' excitement about learning and working on the computer, the teachers are eager to see that the potential of the program is realized.

Technical Concerns

Students adapted quickly to the operation of a computer. Though they exerienced some difficulties in interacting with the terminals, problems that were purely of a technical nature were unusual. For the most part, the problems which arose were due to program errors or ambiguous instructions and are thus included in the following section.

Curricular Concerns

Consistent with their colleagues at Warkworth and Stony Mountain, the staff at Leclerc are eager to see improvements made to the software currently available on the system. While they view the OISE and COMPPIS programs to be valuable at present, they have specific opinions as to how the programs can be modified to better suit the needs of their students.

Because of the specific curriculum guidelines and assessment standards imposed by the Quebec Ministry of Education, use of CAL program is supplemental to the regular language arts or math programs. While learning math on the computer may well reinforce the learning of math in the classroom, the overlap between the two is not always at the same grade level. The teachers propose that in modifying existing curricula, an effort should be made to include the mastery of skills which are requisite to obtaining credits. In other words, they would favour the development of a program based on provincial guidelines for grade standing. Or alternatively, allow that students can obtain credits from CAL math or language arts curricula. This would further reinforce the students willingness to learn and alleviate the fact that presently computer time is time lost from compulsory material.

A priority cited by all members of the staff is for the development of language arts curricula to accomodate the French speaking population.

Math Curriculum: The math teacher contends that math skills have improved significantly as a result of the time students spend on the computer. She theorizes that this is due to an improved attitude toward math. "Initially, 'paper' math is a big problem for many students, but after several hours on the computer, they approach math problems more confidently."

There are, however, several areas in which improvements should be made. The teacher feels that in many cases, directions and explanations could be expressed more simply and concisely so as to increase understanding for students who are typically poor readers. It is also her opinion that "there is too much printed word", that students would respond better to a program that used more graphics.

Language Arts Curriculum: The teacher maintains that students are nonetheless very positive with regards to the curricula, appear to progress well, and have improved skills as a result. "They detest grammar, but they will learn it on the computer."

BASIC Curriculum: Up to sixteen post-secondary students (French and English) are enrolled in the BASIC correspondence course offered through CEGEP. Students use both the Micro located in the language lab and a second machine in the administrator's office. The teacher is satisfied that the program is running smoothly, in terms of student ability to operate the micro terminals, as well as their ability to complete the course.

Administrative Concerns

The administrative concerns expressed by teachers at Leclerc bear much resemblance to those cited by the staff at Warkworth and Stony Mountain. They are anxious to purchase MORE TERMINALS, particularly with the advent of an expansion in French language software. Because there is more software available in English, the CAL program is viewed by many teachers to be a luxury that favours English students. This has increased tension between the two groups of teachers, a situation which teachers predict will be resolved as more French programs become available and both groups are given more time on terminals. At present, the math teacher is working towards scheduling students to begin the on-line BASIC course. Without additional terminals, this will mean less time will be available for math and language arts.

The staff indicated that the lack of PLANNING TIME has been a great hindrance to the success of the program. They maintain that had they been granted the time to become familiar with the software, to educate themselves on the effective use of computers in teaching, and to better plan for implementation, they could have set more ambitious goals for the program. Given adequate planning time, they believe the CAL curricula could be tied more closely to classroom instruction. Prior to beginning students on the on-line BASIC program, for example, the Math teacher is working overtime to complete the program herself.

Related to this, they suggest that teachers should be provided with some form of TRAINING sessions at various stages in the program. Initially, they need to develop an expertise in teaching with CAL. Later, they need to review problems, to examine solutions and to communicate with other teachers within their institution and in other institutions.

A4 SPRINGHILL

The Springhill Institution chose to locate the terminals delivering the mathematics and language arts software in a remote classroom, the GED classroom, under the sole responsibility of a contract teacher. Because of this decision, the evaluator chose to focus on that location/program/teacher and gathered very little information on the rest of the school.

THE REGULAR GED PROGRAM

Springhill has no secondary program issuing provincial credits, rather the high school equivalency diploma is awarded for successfully passing the General Educational Development (GED) exam. One teacher is responsible for teaching all the students enrolled all the subjects necessary to achieve mastery in mathematics, science, language arts (literature, reading skills and writing skills) and social studies. In addition to subject matter knowledge, the teacher must also instruct in test taking skills, current events and life skills such as filling out forms and "proper" oral expression. The teacher interviews students to determine entry to the program. Students are required to be in attendance from 8:30 - 4:00, with the exception of lunch time. A "term" is usually 8-9 weeks in length with 12 students admitted and 3 or 4 still there at the end of the term. One teacher is responsible for teaching all the subjects included on the GED exam, namely mathematics, science, language arts (literature, reading skills and writing skills) and social studies. This program experiences the same problem of attrition because of inmate relase, movement to other institutions or occupations as described for other institutions.

EQUIPMENT

On November 29, 1983, there were four microcomputers with varying numbers of disc drives and two printers used in the teaching of computer literacy and BASIC programming. The microcomputers are located in the regular school space and were used as follows: 16 students work one-half day/week on computer literacy and 10-12 students are working in a course prepared by Nova Scotia Teachers College personnel. Students in this second course average two to three hours per week in micro contact time.

Springhill also has three Cybernex XL84 terminals that are used to deliver on-line math and language arts software. These terminals are located in a classroom that is assigned to the teacher of the inmate students preparing for the GED exam. Due to unanticipated difficulties in the installation of equipment, the on-line terminals were not fully functional until early November when only three weeks remained in the term. The inmate students enrolled in that term worked through several of the programs and their comments are included.

During the December-January period the on-line terminals were used by another contract teacher, Judy Potter, for supplemental work in mathematics with French used as the language of presentation. When the next term of GED students is underway, the on-line terminals will be used extensively in the language arts area as it is felt that some of the COMPRIS courseware may be best suited to this level and kind of inmate student.

After the initial difficulties with installation, there has been only one Cybernex terminal in need of maintenance. The repair was handled through contact with Cybernex, Maritime Telephone and Telegraph, and the teacher, at the suggestion of the evaluation team.

Because the terminals are for the sole use of one teacher there is no scheduling problem in terms of other teachers requiring access time. However, the decision of how best to integrate the software, inmate student learning needs and institutional demands while preparing the students to successfully write the GED has fallen solely on the one teacher. Perhaps this situation is best described as that of the teacher in the one room school in a migrant education camp. (For an analagous situation, the reader might find the following report informative: "Consequences of Combining - formative and summative evaluations: Migrant Education in California as an example" by Rober N. Bush and Thomas P. Sachse, October 1982.)

STUDENT ATTITUDES

The attitudes reported here were gathered November 24, 1983 and are the opinions of three inmate students. (The usual timing of the GED term meant that it would not be possible to visit the next group of students.) As with all other opinions reported, the reader is reminded that the timing of visits was arbitrary and is only one of many potentially possible times of gathering data. Opinions of any program are influenced by a variety of factors. There is no known reason to question the validity or reliability of these opinions, however, this is the "oldest" data and based on an early version of the student questionnaire. On a more positive basis, this small group of students had the most intensive exposure to the software because of their small number, the location of the classroom/terminals and the willingness of the teacher to let the students try the programs and talk about their impressions throughout the software trial. The students who completed the questionnaires had used the computer about 18 hours each (6 hours/week for 3 weeks).

The courses they reported using were the COMPRIS English grammar, critical thinking I and II and literature, software and integers, algebra, statistics, probabilities and metric games in the OISE intermediate mathematics software. Responses are reported verbatim.

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Overall, what do you like about learning on the computer?

"I enjoy using the computer as the examples given during programs are helpful."
"I like the feel of using the terminal and watching the screen."

"The computer is clearer than the teacher: it provides a wider range of information at the students fingertips. It makes learning more interesting."

"I like learning on the computer because it's new, and soon it will be a big part of everyone's life."

Overall, what do you dislike about learning on the computer?

"What I dislike is when I answer questions with a sentence, usually what I type cannot be answered or is ignored." (This was about Compris Software.)
"When I type one rather than 1, my response is registered as a wrong answer."

The computer can answer only its own questions. Also, the answers that I give the computer have to be exactly correct or it ignores them."

"It can't talk or reason."

STAFF ATTITUDES

The two teachers directly involved in the use of the on-line terminals are generally pleased by the addition of the terminals in the classroom now that the difficulties with installation are over.

This site is focusing on trying out the COMPRIS software and using the available OISE math as a refresher course in arithmetic. The teacher reports that working in pairs is possible with some inmate students, but it is not a procedure that can be implemented indiscriminately. The tapes that accompany four of the Compris courses have been stolen once and the time required to replace them means downtime for those particular courses. Many of the activities suggested within the courses do not lend themselves to the particular location and supplies present in this classroom/institution and modifications and suggestions will be forthcoming. The addition of printers to each terminal is seen as desirable if not crucial.

The availability of the messaging system has been beneficial in that it has permitted the exchange of ideas between two institutions, and includes the transfer of an inmate's educational standing to the teacher in the next institution in time to be useful.

APPENDIX B

COMMUNICATIONS FROM OTHER SITES

SITE	EDITOR	REPORTER
Edmonton	Fred Perrin	Maurice Leberge
Collins Bay	.....	Bill Bruder
Matsqui	Computer Club	Ron Porter
Millhaven	.....	Ron Bettney
Warkworth	Doug Pettigrew	Don Kyle

Fred Perrin
Edmonton Institution
Edmonton, Alberta

1984 March 2

Doctor Marty Carlson:

Dear Dr. Carlson:

Regret tie prohibited a more in depth conversation in relation to the computer placed in Unit B. However, to answer your questions:

The terminal was experimentally placed in January of this year. Observations thus far indicate students who normally demonstrate withdrawal patterns in the normal school room setting are able, without fear, to respond at their own speed and without peer criticism to the courses provided. Unfortunately, such courses are limited at this time. I have included those currently available. Additionally, more by good luck than design, other courses become available by loan. The terminal is "on line" and scheduling currently is premised on interest levels and participation. A minor problem of offsetting available lines was overcome by reducing an on line terminal in the schoolroom facility. However, should the experiment prove worthwhile, I believe it would be technically feasible to eventually introduce terminals to each unit.

Maurice, most enthusiastic about the program, was asked to complete the questionnaire. Should you require further information, please let me know. In any event, periodically I shall provide you with meaningful statistics that should prove/disprove the need for expanding the concept.

Fred Perrin

FP/gp

Institution EDMONTON Date FEBRUARY 28/84

Name MAURICE LABERGE

STUDENT ATTITUDE SURVEY

			Yes	No
I.	(1)	Using the computer is a waste of time.		X
	(2)	I enjoy using the computer.	X	
	(3)	The computer makes the lessons interesting.	X	
	(4)	The computer goes through the lessons too quickly		X
	(5)	I don't care when I make a mistake because no one is watching.		X
	(6)	Using the computer makes me feel tense.		X
	(7)	I would like to spend more time on the computer.		X
	(8)	There is always a teacher to help me if I have a problem.		X
	(9)	The computer often breaks down.		X

II. (1) What subjects or courses have you studied on the computer? (ATTACHED)

(2) How many hours per week do you use the computer? TWENTY

(3) Overall, what do you like about learning on the computer?

ACCESS TO STATE OF THE ART MATERIAL AND COURSES AS WELL AS SETTING YOUR OWN HOURS AND RATE OF PROGRESSION.

(4) Overall, what do you dislike about learning on the computer?

THE METHOD USED FOR GRADING COMPLETED COURSE - COURSE THAT IS COMPLETED IS GRADED AT 100% REGARDLESS OF THE ACTUAL TEST RESULT. THIS MAY POSE A FUTURE PROBLEM WITH CREDIBILITY.

(5) Please write anything else you would like to say about learning on the computer.

THE EMPHASIS SHOULD BE ON TEACHING COMPUTER - RELATED COURSES THAT WILL ENABLE AN INDIVIDUAL TO PURSUE A CAREER INTHE FIELD IF HE SO CHOOSES. IT'S NEW, IT'S EXCITING AND THE SATURATION POINT FOR TRAINED TALENT IS NOT CLOSE TO BEING FILLED.

FEBRUARY 29. 1984

COURSE NAME

1. Introduction to Computers. (A)
   This is an excellent introductory course that explains the overall workings of computers. Exams are also set up so a student will write a different one each time he must take a test.

2. Basic Language and Programming Techniques. (B)
   A good course that teaches the fundamentals of writing and testing your own programs. The main weakness is the lack of realistic programming assignments.

3. Data Processing Concepts. (B)
   This is a course that requires a great deal of reading and is of interest to the serious computing student.

4. Personal Financial Analysis. (A)
   Of particular interest to individuals in the system who have always wondered how the average man is able to buy and pay for the things he wants.

5. Personal Career Analysis. (C)
   There are good parts in this course that will assist you in the choice of a career. Not very well laid out.

6. Data Representation Techniques. (A)
   An intensive course that requires a lot of hard work.

7. Introduction to Structured Cobol. (A)
   This is state-of-the-art instruction. For the serious student only. Well presented and laid out instruction.

8. Structured Documentation Techniques. (A)
   An excellent course that requires prerequisites and is part of a larger package. (Homework Curriculum)

9. Network Operating System Techniques. (A)
   The most intensive course offered. This is a course that is lengthy, complex and detailed. Not for the lazy.

10. Fundamentals of Blueprint Reading. (B)
    A fair course that explains the reading and designing of blueprints. Of interest to anyone with inclinations towards being a tradesman.

11. Dilemma Counselling Techniques. (F)
    A completely worthless endeavor. I'm still puzzled!

12. Fundamental System Development. (B)
    A good course composed of many modules that require large amounts of reading.

13. Cobol Programming Techniques. (A)
    This course will teach you Cobol. Well laid out.

14. Fortran Programming Techniques. (C)
    An experimental cost-free course.

15. Business System Analysis and Design. (A)
    Excellent course with the serious student in mind who is preparing himself for an Analysis career.

16. I.B.M. 360/370 Orientation. (B)
    The course does what it is supposed to. Brief.

17. I.B.M. Job Control Technique. (B)
    Good course but poorly laid out and not tested.

18. Cobol Reports and Tables Techniques. (A)
    Comprehensive, well taught course with lots of work.

19. Structured Analysis and Design Techniques. (A)
    An essential part of the overall Cobol program.

20. Validating/Sorting/Updating Sequential Files (A)
    The brother to course above. A good, sound program.

The computer is a valuable teaching aid. You are able to progress at your own rate, pick your own times. There are numerous other courses available that would be of interest no matter your field. This provides an individual to pursue whatever he is inclined to without the problem of having a teacher there.

I prefer to learn on the computer. Most of the courses are a combination of reading and computer-assisted lessons. It requires a lot of work and time must be set aside to do the courses. It's not a hobby - once the original novelty wears off, it is similar in many ways to a correspondence course. It is completely up to you whether or not it is completed.

DMO

COMPUTER ASSISTED LEARNING

STAFF QUESTIONNAIRE

Institution Collins Bay Penitentiary

Name of respondent Bill Bruder

Position Teacher

Date 5 JAN 84

I. IMPLEMENTATION QUESTIONS

1. Equipment

a) How many and what type of terminals do you have?

Type	Number
Apple II + (48K)	9
(four have 16K	
expansion cards.)	

b) How many printers do you have? 4 < 3 Dot Matrix, 1 Daisy Wheel

c) Have there been many breakdowns? Please describe.

not too many - mostly from student errors - eg adding a disk drive with power on - also disks (drives) needing timing + alignment (we send out for alignment)

d) Who does repairs? I do (RCAF experience)

At what cost? cost of parts

Who pays? School budget

e) How long does it take to have the machines repaired?

generally within a day or 2 - when I find the etween classes.

f) Is there a service contract? No

g) Where are the machines located?

classroom ✓ all 9 offices ____ library ____

Other ____

2. Extent of Use

a) How many students use the computer for

math? 0

language arts? 0

36 students each day Other (specify)? Intro to Computers cou gds 10, 11, & 12

b) How many hours per day are computers available to students? 7

c) What percentage of available computer time are the terminals actually utilized? 100%

d) On the average, how many hours per week does a student use the computer? morning students 10 hrs
afternoon student 7½ hrs.

e) Do all students use the machines? No, only those registered in class

f) If only some students use the machine, how are they selected?

They go on a waiting list till a spot is available - there are between 15-25 on list at all times.

g) Are the students ever assigned to machines in groups of two or more? NO although they do help one another at times - we encourage it.

h) What scheduling problems occur?

no problems scheduling - 4 periods a day but problems arise trying to accomodate the demand to use them both for school and admin. purpose

i) How many additional terminals would be required for maximum efficiency? between 12 and 15 for Computer courses plus at least 6-8 for C.A.I. We'd like to use CAI more but we don't have the luxury of enough machines to free some of the ones we have for CAI.

3. Purposes & Problems

a) In which courses are terminals used for regular instruction?

Grade/Course	Instructor	Number of Students
10, 11, 12	Bruder W.J.	18 (2 periods
10, 11, 12	Smith, Peter	18 (2 periods

Intro to Computers
Comp Science

b) In which courses are terminals used for supplemental instruction, exercises, drill, etc.?

Grade/Course	Instructor	Number of Students

NONE! although when we have an available terminal (student sick or absent) another teacher will usually do some CAI or some word process or the school count sheets etc are usually done. see note

c) Are the terminals used for other purposes? Yes!

Student publications — letters home (if you consider a letter a student's publication)

Word Processing — yes — intermittently

Administration — yes — "

Recreation — yes — on special "game" day (rather seldom)

Other Uses —

d) What procedure do you use in deciding where a student should begin a computer program?

UNCLEAR?

- writing a program? - taking the course?
- doing CAI? or what?

NOTE: Our students have written programs for the school count, canteen purchases etc and they come from around the prison to run them off or update their files.

e) What techniques do you use in monitoring student progress?

- testing on/off machine (both)
- use of finished programs.
- observation

f) How do you decide when to change the students lesson?

Our students progress at their own rates. When they finish one unit, they are allowed to go on to another.

g) Do you keep records of student time on the computer? Please describe or attach a sample of what has worked for you. NO! we take attendance each day.

h) Do you keep records of student progress through computer units? Please describe, specifying subject area referred to.

yes. (mark sheet) (enclosed)

i) How many students have completed computer units, as per the following?

N/A

	Math	Language Arts	Other
<5 units			
5-10 units			
>10 units			

j) In your opinion, what is the primary objective of using computers in your school or classroom?

① computer literacy ② programming ③ word processing ④ data management.

If we had the machines, we would establish an elaborate CAI program. - we need more free computer time ~~70~~ - the demand is there!

k) Thus far, how do you think this objective has been achieved?

(well. — Computer Literacy)(well - programming)
(well - word processing)(not so good - data management)
(dismal - CAI) - but it's not possible under the circumstances

NA

l) What problems have you had in implementing the math curriculum? _____

the language arts curriculum? _____

other? (specify) _____

m) What recommendations would you make for changing the way in which computers are used in your school?

more CAI — different micros eg Commodore 64, IBM PC, TRS-80 etc. — so students would be exposed to more than the Apple

n) What other factors regarding computer assisted learning would you like to mention?

We need more machines — and money to buy "good" software

o) What additional in-service opportunities (courses, workshops, conferences) would assist you?

intensive time to evaluate CAI software — — exposure to the way other teachers in other schools do it -...(for new ideas etc)

p) What additional support would you like to have?

more equipment — see above references. (go ahead -... look!)

q) What specific problems do students encounter in using the computer?

– We have a literacy problem – when they use the computers for CAI (seldom) they need someone to read instructions to them.
– others generally have very few problems!

II. SOFTWARE EVALUATION*

We are interested in knowing how you would rate each of the computer courses offered to your students. In the pages that follow, you should carefully consider the description at both ends of each scale and then assign a value on the -3 to +3 scale according to how well the left or right description applies to the particular program you are judging. Mark only one point on each scale. If you cannot make a decision about a particular scale, mark the zero point for that scale.

* I am answering the remaining questions based upon our very limited use of CAI. I'll assess the two most commonly used CAI packages.

*Adapted from Preliminary Draft 2: Micro-computer Software Evaluation Instrument drafted by J.L. Fox and L.E. Kopler (members of 1983 NSTA Task Force on Assessing Computer Augmented Science Instructional Materials) Learning Research and Development Centre, University of Pittsburgh, March, 1983.

July 12, 1983

Attn: Mr. Tscherwitz
A/W Socialization

Ref: Matsqui Computer club Proposal

HISTORY: Computer programming was initially brought to Matsqui under the auspices of the University of Victoria. The interest generated by this exposure to computers has been such that a Computer Club has been proposed.

PURPOSE: The enthusiastic interest in computer science and programming among prisoners at Matsqui Institution is the prime reason for the development of this club. The essential purpose is to allow prisoners access to a computer during leisure hours so as to enhance their educational development and increase their level of job skills pending release into society. The Matsqui Computer Club is envisioned primarily as an educational forum, however this emphasis does not preclude the possibility of sponsoring socials or temporary release programs in the future.

OBJECTIVES: This club intends to provide the necessary computer equipment to allow individuals to learn programming and other computer related skills--both educational and occupational.

The immediate objective of the Computer Club is to acquire a complete Apple compatible microcomputer system for the use of club members in the living unit. The necessary funds for the purchase of the computer will be raised by the club members themselves. The other items of equipment initially required are a standard audio cassette deck for storing programs, a television set for use as a monitor and a video modulator to interface the monitor to the computer. Donations and loans of these auxiliary pieces of equipment can be arranged by the club members until such time as funds are available for the purchase of new equipment.

Another objective of the club is to build a library of computer software, books and magazines. Subscriptions, books and computer related material will be purchased as funds allow and saved for the use of the club. A catalog of reference material will be kept up to date for easy use. Each member of the club will be able to obtain as a personal asset a library of useful computer programs on disk and cassette. Such sharing of knowledge and skill should prove mutually advantageous in both scholastic and occupational pursuits.

As part of the educational emphasis of the club we intend to have a program of guest speakers, seminars and workshops. Speakers would include academics involved in computer science, software salesmen to explain and demonstrate programs and hardware salesmen to demonstrate the latest equipment. The club also intends to maintain correspondence with outside computer clubs and computer vendors.

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If interest and funds allow, additional systems will be purchased in the future to attempt in a small way to keep up with the rapidly increasing role of computers in every facet of human life.

PROGRAM: The club program will center around the actual use of club equipment by individual members as they learn computer science, BASIC language and programming. More advanced members will be involved in writing programs. A schedule of use will be posted and adhered to by club members. The club library will be open to all members of the club. Informal meetings will be held weekly to arrange scheduling and other matters that might arise.

The formal club structure will include the elected positions of President, Vice President, Secretary and Treasurer. These four elected positions will make up the Executive Board. The particular functions of each officer will be detailed in a forthcoming appendix.

A monthly general meeting will be formally recorded by the secretary. Business to be discussed will be placed on the agenda and will include such matters as finance, fund raising, the use of equipment and materials and future planning. All purchases will be decided upon by vote of the general club body.

Membership will be limited to members who pay the required money donation for membership in the club. New membership requires a 2/3 majority vote for entry into the Matsqui Computer Club.

New business will be placed on the agenda for discussion and resolution. When club business is disposed of the club meeting will turn to educational matters, guest lectures and video presentations.

The monthly meetings would be held in the Social-Development area on one Thursday evening a month. Mr R. Reimer has indicated that the space will be available at this time.

The Matsqui Computer Club needs a space in the living unit to act as club headquarters. The equipment, club records and library would be stored there. The Camera Club has submitted a proposal to use a living unit office on the second floor. They have agreed to share this office with the Computer Club if they are granted permanent use of it by the administration. The Computer Club would only need a small lockable cupboard built into it. Mr Gutierman of the Living Unit has stated that he has no objection to the use of the office or to the club's existence within the living unit. He expressed some concern about sharing space with another club, and about the control of the equipment. He said he would be satisfied with a copy of the equipment schedule weekly stating the times, the user and the cell location where the equipment will be used. Equipment will be contraband if it is not used in the specified location at the specified times. A copy of the schedule would accompany all of the equipment and also be posted in the computer club room. The club may wish to borrow audio and video equipment as necessary.

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MEMBERSHIP: As the basis of the club is access time to a computer, the membership of the club will be restricted to members willing and able to support it financially through dues and donations. The club will require a cash flow and it is a belief of the founding members that responsibility follows financial involvement. Approximately $200 - $500 is required to set up each computer. A ratio of seven members per computer is the maximum that would permit reasonable access time. Until funds are raised to purchase a second system the membership will be limited to seven active members. If more prisoners are interested and they can support the purchase of a second computer, then the membership will be expanded. Eventually a large membership is desirable to support a wide range of club programs and equipment purchases.

.....
R. Porter (2895)

cc: Mr. Sissons, Warden
Mr. Casey, HLU
Mr. Riemer, SDO
Mr. McCreary, A/A/W E&T

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COMPUTER ASSISTED LEARNING

STAFF QUESTIONNAIRE

Institution [illegible]

Name of respondent [illegible]

Position [illegible]

Date [illegible]

I. IMPLEMENTATION QUESTIONS

1. Equipment

a) How many and what type of terminals do you have?

Type	Number
[illegible]	[illegible]
[illegible]	1

b) How many printers do you have? ONE

c) Have there been many breakdowns? Please describe.

[illegible]

d) Who does repairs? [illegible]

At what cost? [illegible]

Who pays? [illegible]

e) How long does it take to have the machines repaired?

[illegible]

f) Is there a service contract? [illegible]

g) Where are the machines located?

classroom ✓ offices ___ library ___

Other [illegible]

2. Extent of Use

a) How many students use the computer for

math? NONE

language arts? NONE

Other (specify)? [illegible]

b) How many hours per day are computers available to students? 6

c) What percentage of available computer time are the terminals actually utilized? 80-90%

d) On the average, how many hours per week does a student use the computer? 5

e) Do all students use the machines? NO

f) If only some students use the machine, how are they selected?

ONLY STUDENT ADMITTED AND ENROLLED IN THE COMPUTER COURSES WHICH STARTS IN GRADE 10

g) Are the students ever assigned to machines in groups of two or more? NO

h) What scheduling problems occur?

1) CONFLICTS BETWEEN COMPUTER TIME AND OTHER SUBJECT CLASSES

2) PERSONALITY CLASHES [illegible]

i) How many additional terminals would be required for maximum efficiency? NONE [illegible]

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3. Purposes & Problems

a) In which courses are terminals used for regular instruction?

Grade/Course	Instructor	Number of Students
[illegible]	[illegible]	10

b) In which courses are terminals used for supplemental instruction, exercises, drill, etc.?

Grade/Course	Instructor	Number of Students
NONE AS YET IT IS BEING CONSIDERED FOR SUPPLEMENTAL INSTRUCTION IN THE LOWER GRADES, BUT THIS IS DEPENDENT ON GETTING SEVERAL MORE MACHINES [illegible]		

c) Are the terminals used for other purposes?

Student publications

Word Processing ✓

Administration → THE ADMIN HAVE THEIR OWN MACHINES

Recreation

Other Uses

d) What procedure do you use in deciding where a student should begin a computer program?

EVALUATION OF ACADEMIC BACKGROUND RECOMMEND GRADE [illegible] [illegible] [illegible] [illegible] [illegible]

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e) What techniques do you use in monitoring student progress?

TESTING AFTER COMPLETION OF [illegible]

[illegible]

[illegible]

f) How do you decide when to change the students lesson?

AFTER ACHIEVING MASTERY (SC?)

g) Do you keep records of student time on the computer? Please describe or attach a sample of what has worked for you. EACH STUDENT IS ASSIGNED A TIME SLOT IN THE DAY ATTENDANCE IS TAKEN DAILY

h) Do you keep records of student progress through computer units? Please describe, specifying subject ~~area~~ referred ~~to~~.

IN THE COMPUTER COURSE A STUDENT RECORD SHEET IS KEPT FOR EACH STUDENT

i) How many students have completed computer units, as per the following?

	Math	Language Arts	Other
<5 units	____	_____	____
5-10 units	____	_____	____
>10 units	____	_____	____

N/A

j) In your opinion, what is the primary objective of using computers in your school or classroom?

[illegible]

[illegible]

[illegible]

k) Thus far, how do you think this objective has been achieved?

[illegible]

l) What problems have you had in implementing the math curriculum?

N/A

the language arts curriculum?

N/A

other? (specify) N/A

m) What recommendations would you make for changing the way in which computers are used in your school?

[illegible]

n) What other factors regarding computer assisted learning would you like to mention?

[illegible]

o) What additional in-service opportunities (courses, workshops, conferences) would assist you?

[illegible]

p) What additional support would you like to have?

q) What specific problems do students encounter in using the computer?

[illegible]

II. SOFTWARE EVALUATION*

We are interested in knowing how you would rate each of the computer courses offered to your students. In the pages that follow, you should carefully consider the description at both ends of each scale and then assign a value on the -3 to +3 scale according to how well the left or right description applies to the particular program you are judging. Mark only one point on each scale. If you cannot make a decision about a particular scale, mark the zero point for that scale.

*Adapted from Preliminary Draft 2: Micro-computer Software Evaluation Instrument drafted by J.L. Fox and L.E. Kopler (members of 1983 NSTA Task Force on Assessing Computer Augmented Science Instructional Materials) Learning Research and Development Centre, University of Pittsburgh, March, 1983.

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Martu:

Here is the note from Don Kyle, inmate at Warkworth.

Title: Computer Necleus Educational Program

1. The time factor alloted for computer use is definitely not enough for the essential purpose of comprehension.

2. A greater number of computers (terminals) would help to solve this serious problem.

3. The avenues for "up-grading" the computer educational programme must have a greater diversity, if the inmate is to obtain any concrete benefits for himself and society.

4. Desire Creates Interest

Besides the academic courses, my eye of many years of penal life sees the following computer courses as "builders of the mind" - therefore priorities!

A. Mental Health - helping the inmate to solve his own problems.
B. Public Relations - and Money Management
C. The effect of drugs on the brain and body, first aid, etc.
D. A "practical" variety of trades-training courses. Ones that can be applied in society - not stocking stuffers!
E. Courses: "How Winners are made" i.e. Conrad Black & Wayne Gresky.
F. World religions & Politics.
G. Etiquette: Social behavior & its benefits.
H. Courses: "Social worker & Youth Consellor".
I. Insight Courses: Lions, Kiwanis, Kinsmen, organizations & benefits to man.

The mind of all man kind must be opened up - if progress is expected.

The same applies to our prison educational system!

This is the content of his notes. He said he will answer the other questions asap.

How is the weather at Kanata? Here we are having snow, with a promise of freezing rain this afternoon!

Doug Pettigrew
5 Mar. 84

APPENDIX C

SUPPLIERS

COMPRIS INC.
E.(Ted) Davies
500 Foxview Place
Ottawa,ON K1K 4C4
613-746-3526

CYBERSHARE LTD.
A.L. Ballegeer
550 Berry Street
Winnipeg, MAN R3H 0R9
204-775-0181

Mark Letremble
Montreal,QUE
514-284-2194

CYBERNEX
Ottawa, ONT.
613-741-1540x201
Frank Barowski

ONTARIO INSTITUTE FOR STUDIES
IN EDUCATION (OISE)
Mary Pat Carrol MECA
Bill Olivia HOMECOM
252 Bloor St. West
Toronto, ON M5S 1V6
416-923-6441

ALGONQUIN COLLEGE
Robert Villeneuve
Ottawa ONT.
613-725-7497

CAL SCHOOLS/TEACHERS

LECLERC INSTITUTION
City of Laval,QUE.
H7C 1P1
Pauline Pelletier
Eric Blackburn

SPRINGHILL INSTITUTION
Springhill, N.S.
B0M 1X0
Dan Joseph
Judy Potter

STONY MT. INSTITUTION
Stony Mt.,MAN.
R0C 3A0
Winston Alexander
Don Lewis
Lucas Paul

WARKWORTH INSTITUTION
Campbellford, ONT.
K0L 1K0
George Stephenson
Doug Pettigrew
Bill Issac
Ernie Alkinbrack

EDMONTON INSTITUTION
Edmonton, ALTA.
T6G 2H1
Rick Nickolai
Fred Perrin
Pat Mulgrew

APPENDIX D ACTIVITES

In conducting the formative evaluation of CAL the activities consisted of visiting the classrooms of eight penetentiary schools, interviewing all teachers in attendance on the days of the visits, interviewing all inmate students who had used CAL and were willing to be interviewed and in attendance on the days of our visits, administering an opinion instrument to all students involved with CAL who were willing and able to complete the instrument and leaving a questionnaire that was to be filled out and returned by the CAL teachers.

In addition to visits at the penitentiaries, and on behalf of CSC we met with other suppliers of courseware, attended demonstrations of hardware and spent considerable time in coordinating contacts, supplying information (names addresses) and suggesting improvements and alternate strategies to the on-line site personnel to permit them to use the system during the pilot period and until such time that someone at NHQ assumed the responsibility.

Our schedule of visits is shown below:

Date	Site/Activity
March 9, 1983	Conference Centre/ RMETS, AWETS
June 14-16, 1983	NHQ/Observed Teacher Training
Sept 15, 1983	Collins Bay/Met with 4 teachers
Sept 15, 1983	Millhaven/Met with supervisor, AWET, teacher
Sept 21, 1983	Warkworth/Met with supervisor, teachers, students
Sept 29-Oct 3, 1983	Matsqui/Met with Supervisor, AWETE, teachers, computer club
Oct 5, 1983	Stony Mountain/Met with teachers, students
Oct 4-5, 1983	Cybershare/Met with Director of Operations, Systems analyst
Oct 17, 1983	Springhill/Assistance to teacher

Date	Site/Activity
Oct 17-21, 1983	Carnegie Mellon University (Dr Larkin), University of Pittsburgh (Drs. Hsu, Nitko), Learning Research and Development Center (Drs. Klopfer, Champagne, Greeno, Lesgold, and systems analysist, Jim Fox)
Nov 2, 1983	Compris/Demonstration of one lesson
Nov 22, 1983	Leclerc/Met with teachers, students
Nov 24, 1983	Springhill/Met with Warden, supervisor, teachers, students
Dec 2, 1984	Digital Equipment of Canada/Met with Director of software (R. Ratzlaff)
Dec 14, 1983	Infomart/Demonstration of Courseware
Dec 16, 1983	NHQ, Infomart/Technical assistance to Chief Education & Training
Jan 12, 1984	University of Ottawa/Discussion of Interim Report
Jan 13, 1984	Media & Technology Center/Previewing Bits & Bytes Video Tapes
Jan 19-20, 1984	Stony Mountain/Met with supervisor, teachers, students
Jan 19, 1984	Rockwood/Met with Director of Inmate Programs, HLU, inmate student
Feb 1, 1984	Ottawa/Apple Canada Macintosh Demonstration
Feb 2-3, 1984	Warkworth/Met with teachers, students
Feb 9-10, 1984	LeClerc/Met with AWET, teachers, students; assistance to acting supervisor
Feb 16, 1984	Edmonton/Met with AWS, teachers, HLU
Feb 17, 1984	University of Alberta/Met with Drs. Szabo, Traub
March 27, 1984	NHQ, Cybershare/Technical assistance to Chief Education & Training
April 4, 1984	Conference Centre/AWET, RMET

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ACKNOWLEDGMENTS

We would like to thank Dr. Gerald Trottier, Dr. Robert O'Reilly and Mrs. Andrea Cote of the University of Ottawa for their assistance in interviewing staff and inmate students, Dr. Marvin Boss for his comments on the draft version of the report and the CSC education and training staff who assisted us.

For the information of those who may wish to know more about the different organizations supplying services for this project or the teachers to contact in the institution schools, we have provided names and addresses in Appendix C. For additional information on computer usage in CSC schools, see the reports by Richard Talbot titled Project Report, Computer Application Training Review; the opinion paper by John Broere of Systemhouse titled CBL at CSC; the report by Stephen Parsons of the Inmate Employment Branch of CSC; or the report, Continuous Inmate Training at Edmonton and Drumheller Institution using the PLATO system by Dr. Michael Szabo of the University of Alberta and Ulrich Nikolai of the Alberta Adult Education Center.

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